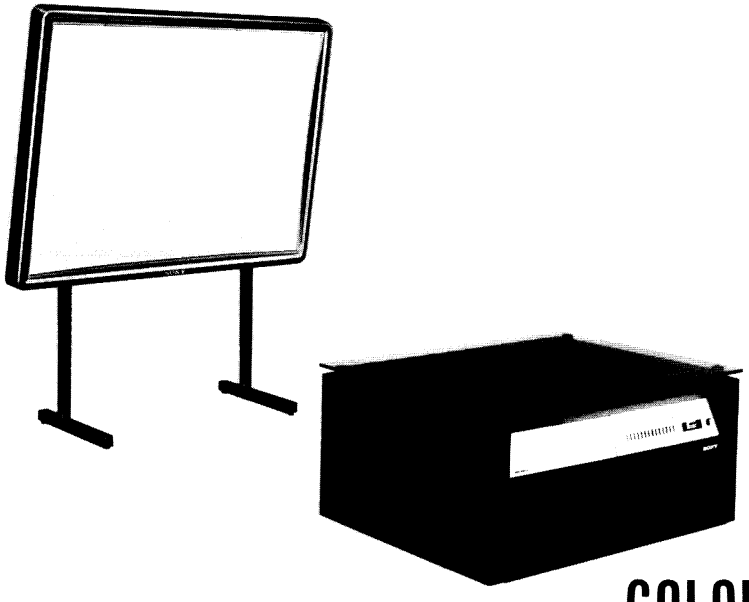
KP-5020/7220

Chassis No. KP-5020 : SCC-316A-A
KP-7220 : SCC-317A-A

US Model



COLOR VIDEO PROJECTION SYSTEM

SPECIFICATIONS

Projected Picture Size:	50 inches diagonally (KP-5020) 72 inches diagonally (KP-7220)
Audience Area:	Viewing distance 3.0 m (10 ft) minimum to 18.3 m (60 ft) maximum (KP-5020) 3.6 m (12 ft) minimum to 24.4 m (80 ft) maximum (KP-7220) Optimum seating arrangement within approx. 45 degrees from center
Throwing Distance:	Approx. 1.8 m (6 ft) (KP-5020) Approx. 2.5 m (8 ft) (KP-7220)
Screen Material:	Aluminum foil concave screen
Projection System:	3 picture tubes, 3 lenses horizontal in-line system
Picture Tube:	5.5-inch high-brightness monochrome tubes
Projection Lens:	F1.0/130 mm plastic lenses
Television System:	American TV standards
Channel Coverage:	VHF channels 2 – 13 UHF channels 14 – 83 (a total of up to 14 preselected channels)

– Continued on page 2 –

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ! ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SONY

SERVICE MANUAL

Antenna: VHF: 75 Ω unbalanced antenna terminal
UHF: 300 Ω balanced antenna terminal

Intermediate Frequencies:
Picture i-f carrier: 45.75 MHz
Color subcarrier: 42.17 MHz
Sound i-f carrier: 41.25 MHz

Sound System: 4.5 MHz intercarrier

Speaker: 2 speakers, 10 cm (4 inches) dia., 8 Ω dia.,

Audio Output: LINE OUT (2 phono jacks)
0.44 V (–5 dB), approx. 10 k

AC Outlet: 300 W (max.)

Automatic Controls:
ABL (automatic brightness limiter)
ACC (automatic color control)
ACK (automatic color killer)
AFC (automatic frequency control)
AFT (automatic fine tuning)
AGC (automatic gain control)
ANC (automatic noise canceller)
AVR (automatic voltage regulator)

Power Requirements: 120 V ac, 60 Hz

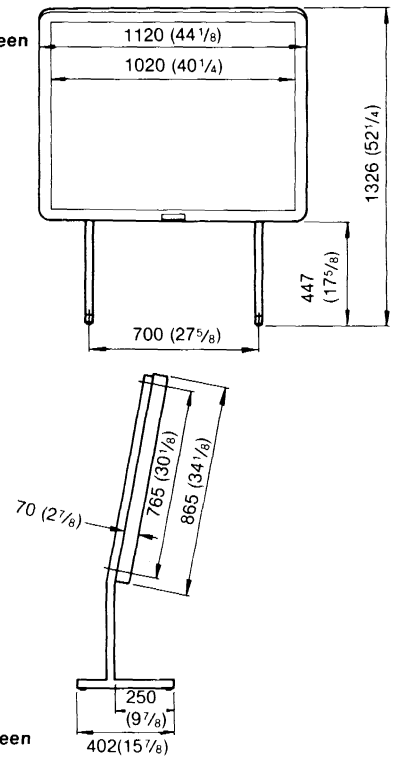
Power Consumption: 130 W (max.), 100 W (average)

Dimensions: Projector
Approx. 830 (w) x 424 (h) x 650 (d) mm
32 3/4 (w) x 16 3/4 (h) x 25 5/8 (d) inches
including projecting parts and controls
Screen
See the figure

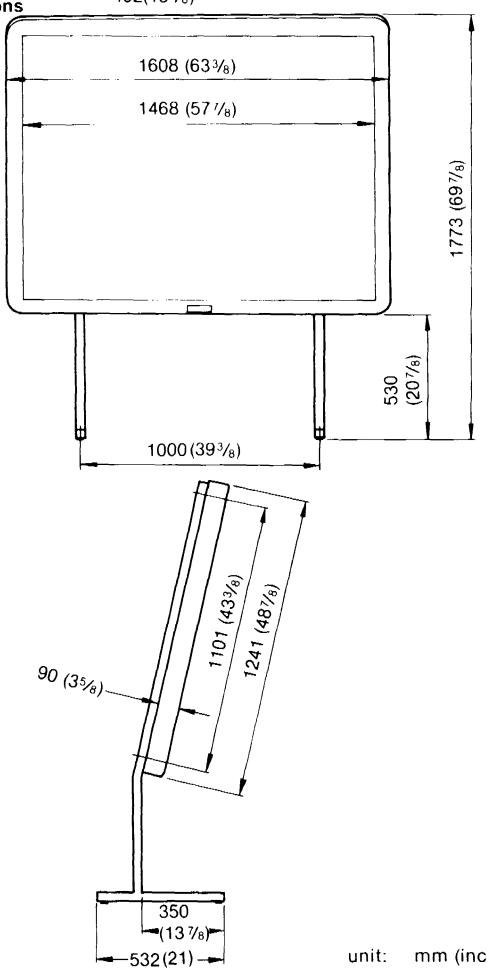
Weight: Projector
Approx. 50.6 kg, 111 lb 9 oz
including top board of 13 kg, 28 lb 11 oz
Screen
KP-5020: Approx. 8.9 kg, 19 lb 10 oz
KP-7220: Approx. 17.2 kg, 37 lb 13 oz
including screen supports

Accessories Supplied: Channel number segments
Antenna connector
(300–75 matching transformer is built-in)
Instruction manual

KP-5020 screen dimensions



KP-7220 screen dimensions



unit: mm (inches)

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

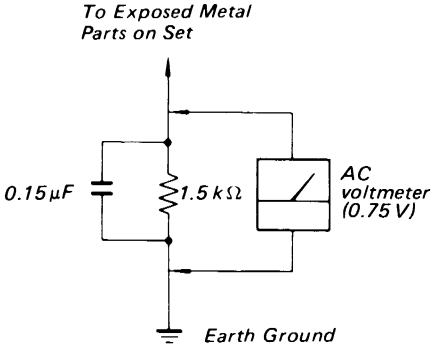


Fig. A. Using an AC voltmeter to check AC leakage.

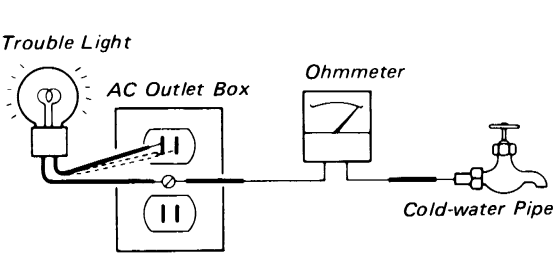


Fig. B. Checking for earth ground.

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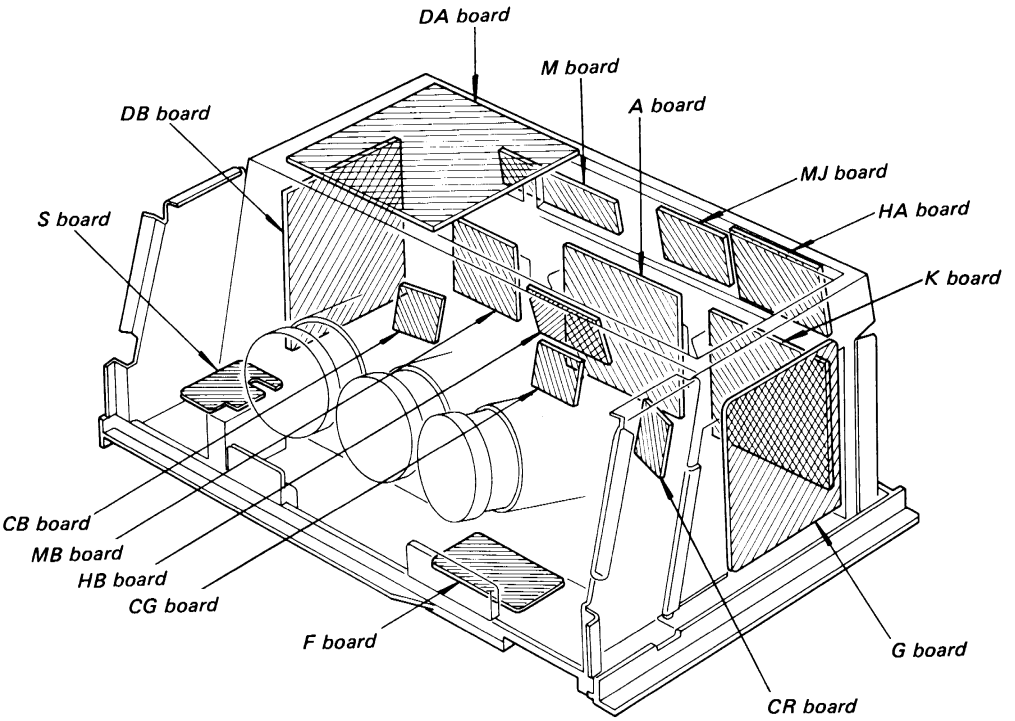
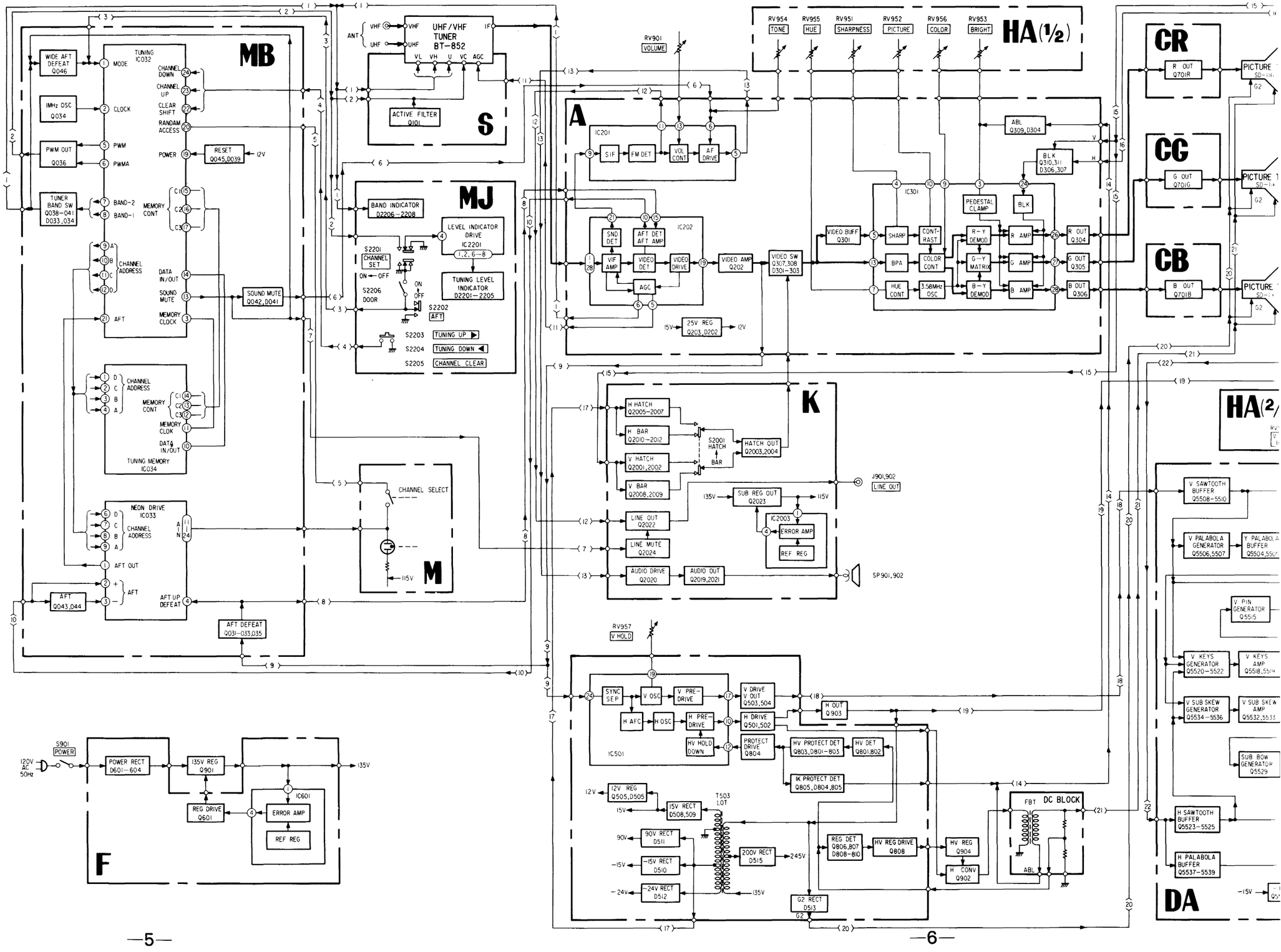
CIRCUIT BOARDS LOCATION

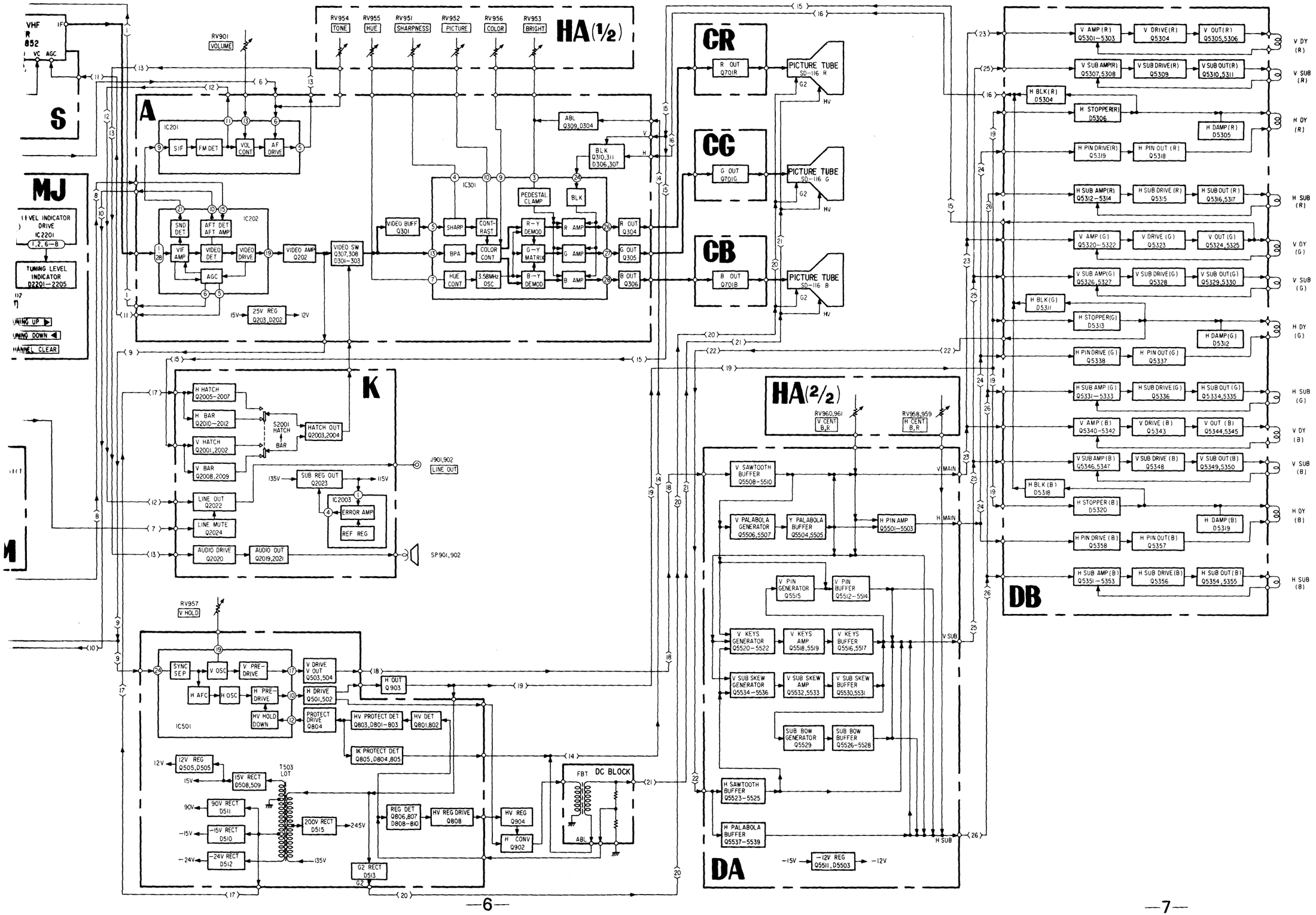


SECTION 1
OUTLINE

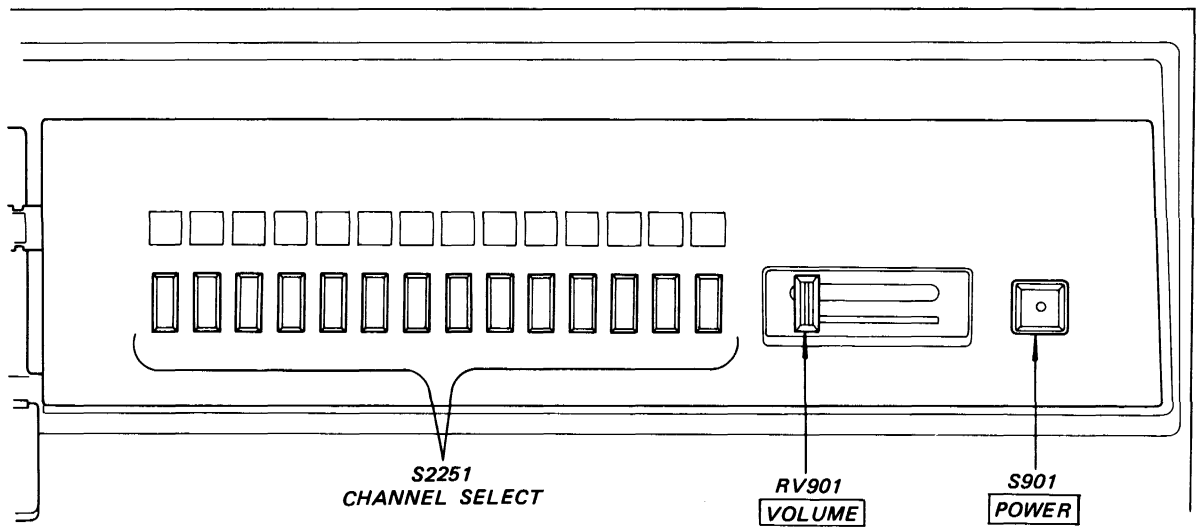
1-1. BLOCK DIAGRAM

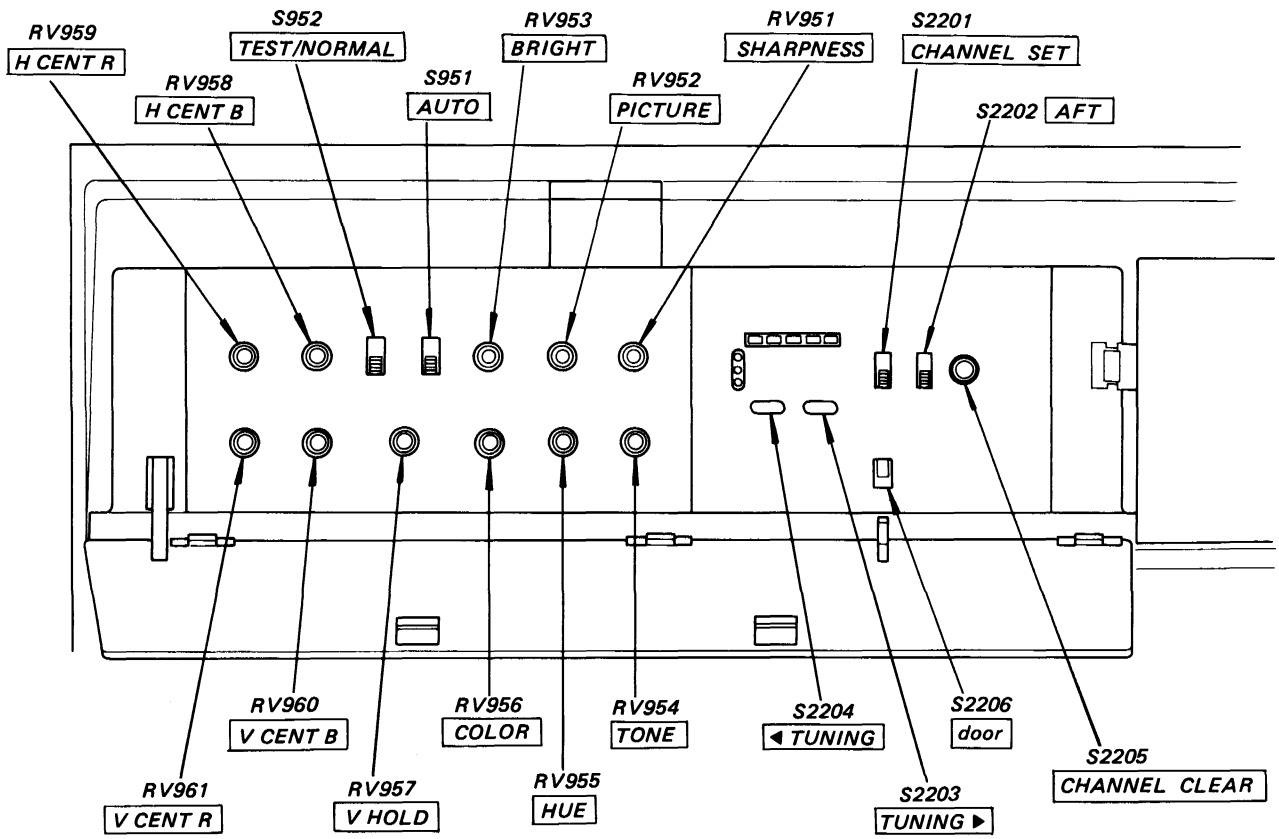


SCC-316A-A/SCC-317A-A KP-5020/7220

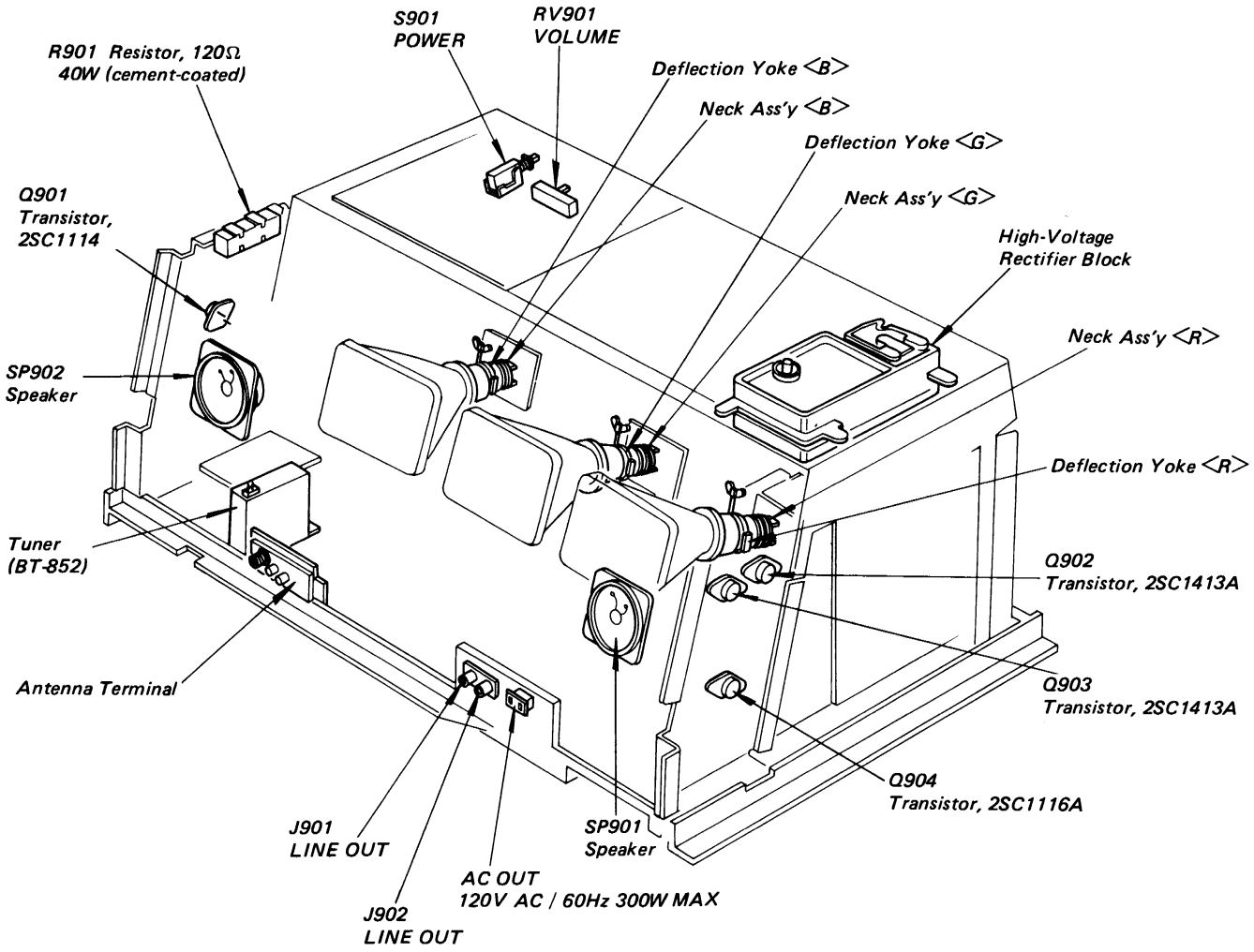


1-2. CONTROL PANEL VIEW





1-3. INTERNAL VIEW

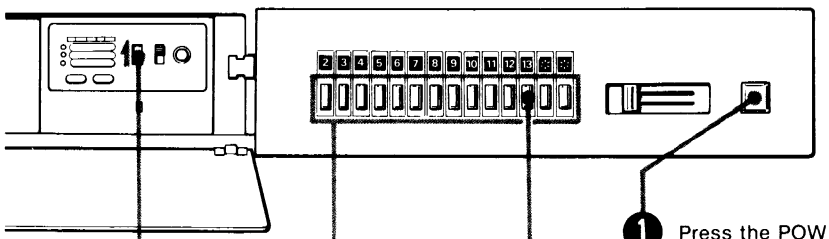


1-4. CHANNEL PRESETTING

Ⓐ TO PRESET UHF CHANNELS ON THE PRESENTLY UNUSED POSITIONS

By using the factory preset 2–13 pushbuttons, you have been able to determine which VHF stations provide good reception. From the local newspaper, or your neighbors, or a TV set, you can determine which UHF stations provide satisfactory reception in your locality.

Open the front panel to expose the presetting controls



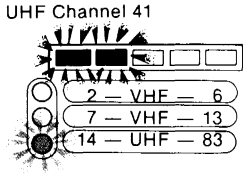
❶ Press the POWER Button, (the projector will turn on).

❷ Press the highest numbered VHF Channel-select Button (Normally channel 13). If no picture appears on the screen, press the next lower VHF Channel-select Button (12). If no picture appears, continue this procedure with the next lower VHF channel until a picture appears on the screen.

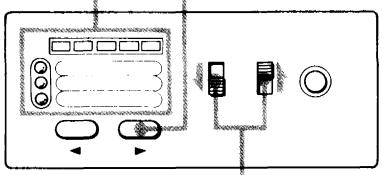
❸ Set the CHANNEL SET Switch to ON. (This switch must be ON for presetting stations, and it must be OFF for rechecking stations already preset).
- The position of the AFT Switch does not matter.

❹ Press the Channel-select Button that you wish to preset to receive a UHF station. (You may use the right-most two buttons marked with asterisks or any VHF position 2 – 13 that does not contain an active channel.)
- The Channel Indicator will illuminate and the station you have selected in step ❷ will appear on the screen. (Disregard the number or asterisk indicated as this will be changed later.)

Ex. UHF Channel 41



Tuning Indicator and Band Indicator Lamps
The red lamp when lit shows you are in the Band including channels 2 through 6, the yellow lamp when lit shows you are in the band including channels 7 through 13, and the green lamp when lit shows you are in the band including channels 14 through 83. Within each of these bands, the multi-segment Tuning Indicator will show in what portion of the band you are tuned to at any given moment, with the left-most segment indicating the lowest frequency within each band, and the right-most segment indicating the highest frequency within each band.



❺ Press the TUNING-up ▶ Button (do not hold the button in, just press it momentarily). Allow 1 or 2 seconds for the picture to stabilize.
● In strong signal areas, tuning may sometimes stop between channels. If a station is not received, press the TUNING-up ▶ Button again.

❻ Repeat steps ❺ as required until your desired station appears on the screen. Use the Tuning Indicator and Band Indicator Lamps (explained above) as guides.

STOP! (READ NOTE)
NOTE: You have preset the desired UHF station on the Channel-select Button you have selected. If another UHF station is not available or you do not wish to continue presetting at this time, proceed to step ❽. If you wish to continue presetting other available UHF stations, proceed to step ❼

❼ Select another vacant channel by pressing the desired Channel-select Button; press TUNING-up ▶ Button, and allow picture to stabilize; continue this procedure until all desired UHF stations have been preselected (if problems are encountered refer to steps ❹, ❺ and ❻).

❽ Set the CHANNEL SET Switch to OFF and make sure the AFT Switch is now set to ON.

After the presetting has been completed, replace the Channel Indicating Segments to correspond to your presetting (see page 13) and close the front panel.
● If there is a VTR position to be included, refer to page 13.
● To use your projection system with a cable television system, contact a representative of the cable company for instructions regarding channel selection. In most cases, this adjustment will be made by the cable company at the time of installation.

Ⓑ TO ARRANGE THE ACTIVE VHF AND UHF CHANNELS IN NUMERICAL SEQUENCE OR YOUR DESIRED SEQUENCE

Any push button can be set to any frequency from below channel 2 to the highest UHF TV frequency.

❶ Make a list of your receivable VHF and UHF stations and list them as shown in the following example.
VHF: Channels 2, 4, 5, 7, 9, 11 and 13
UHF: Channels 21, 25, 31, 41 and 47
❷ Having made such a list, remove the Channel Indicator Sheet from the panel, and insert numbers to correspond to your list (instructions on changing numbers are on page 13). You are now ready to preset the Channel-select Button to correspond to your selection of stations.

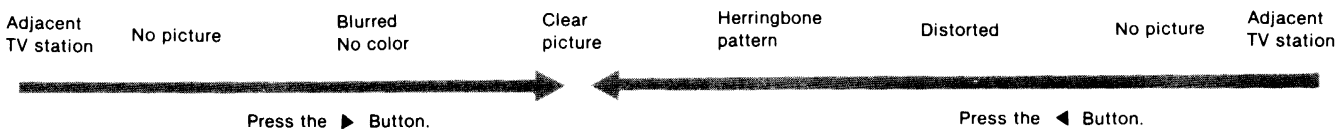
Example

❸ Press the POWER Button, (the projector will turn on).
❹ Set the CHANNEL SET Switch to ON (This switch must be ON for presetting stations, and it must be OFF for rechecking stations already preset).
❺ Press the Channel-select Button to be preset first. The station selected just before the CHANNEL SET Switch had been set to ON will appear on the screen (the channels may be preset in any order, however, it is more convenient to start with the lowest channel number and proceed to the highest channel number when channels are placed in ascending numerical order).
● In our example above, we would start by pressing the Channel-select Button marked 4, since channel 2 has already been preset at the factory.
❻ Using the Tuning Indicator and Band Indicator Lamps (explained in section Ⓐ), press the TUNING-up ▶ Button for locating higher numbered channels or the TUNING-down ◀ Button for locating lower numbered channels. (Do not hold the button in, just press it momentarily).
Allow 1 or 2 seconds for the picture to stabilize.
❼ Repeat step ❻, as required until your desired station is received.
● In strong signal areas, tuning may sometimes stop between channels. If your desired station cannot be received, press the TUNING Button again.
❽ Press the next Channel-select Button to be preset and press the TUNING-up ▶ or TUNING-down ◀ Button as required to locate the next station.
● In our example we would now press the next Channel-select Button to the right (marked 5) and press the TUNING-up ▶ Button to receive the next higher station.
❾ Repeat step ❽ until all desired stations have been preset.
❿ Set the CHANNEL SET Switch to OFF and make sure that the AFT Switch is now set to ON.

Alternative Tuning Method
Before tuning in the desired station, you may use the CHANNEL CLEAR Button to erase any memory on the depressed Channel-select Button, and to position its tuning to a frequency below channel 2. Then use the TUNING-up ▶ Button as often as required to locate your desired station.

To fine-tune the channel manually
In case of extreme interference, or of an extremely weak station, adjust the fine tuning manually as follows.

Check that the CHANNEL SET Switch is set to OFF, set the AFT Switch to OFF and keep the TUNING-up ▶ or TUNING-down ◀ Button depressed until a clear picture is obtained. Refer to the following chart.
When the fine tuning is completed, close the front panel with AFT Switch set to off.

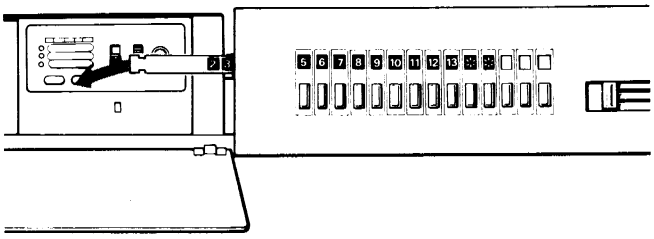


Press the ▶ Button.

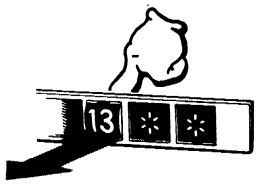
Press the ◀ Button.

To replace the number-indicating segment

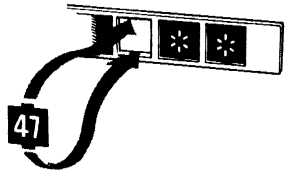
❶ Remove the Channel Indicator sheet.



❷ Press the segment out from the rear.



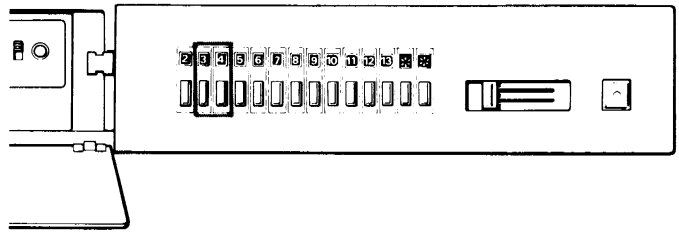
❸ Install the correct number segment.



❹ Replace the sheet in the original position.

To preset for VTR playback

At the factory, the second button from the left is preadjusted to VHF channel 3, and the third button to VHF channel 4. One of these channels, 3 or 4, is locally inactive and may be used to view the playback picture from a Sony Betamax videocassette recorder (or other VTR) equipped with an RF output terminal.

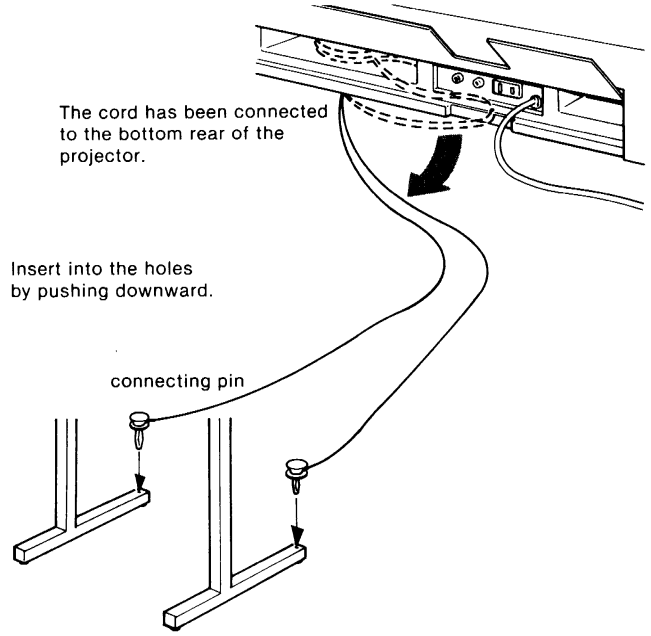


If you wish to preset some other position to receive the signals from the recorder, complete the connections and proceed as follows.

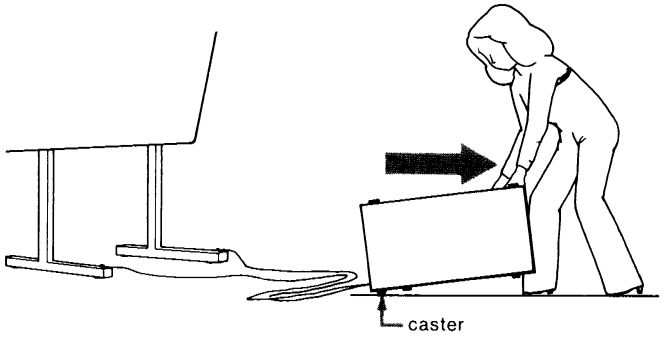
❶ Set the recorder to the playback mode.
The signal from the recorder will be fed to the projector.
❷ Set the CHANNEL SET Switch to ON.
❸ Press the Channel-select Button to be preset for viewing the playback picture.
❹ Press the CHANNEL CLEAR Button.
❺ Press the TUNING-up ▶ Button until VHF channel 3 or 4 (the operating channel of the rf unit built into the recorder) is received, whereupon a clear picture will be obtained.
❻ Set the CHANNEL SET Switch to OFF.

1-5. SETTING UP THE SYSTEM

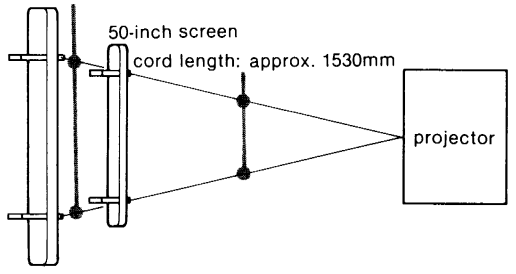
❶ Take the Positioning Cord out of the Power Cord Container and connect both ends of the cord to the screen support feet.



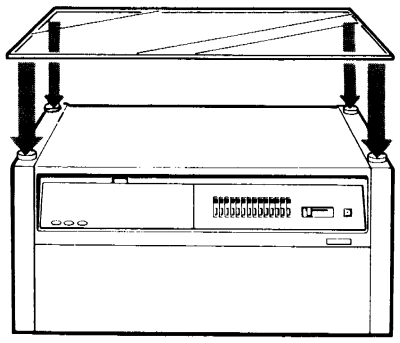
❷ Move the projector until both sides of the cord are equally tensioned.
When moving the projector, lift up the front side and roll it on the caster.



72-inch screen
cord length: approx. 2183mm
50-inch screen
cord length: approx. 1530mm



❸ Pull out the connecting pins to remove the Positioning Cord from the screen support feet. Store the Positioning Cord in the Accessory Container or the Power Cord Container.
❹ Put the Top Board (made of tempered glass) on the projector. The projector may thus be used as a center table.

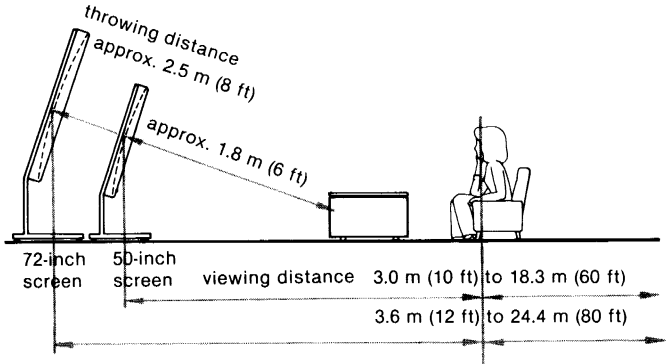


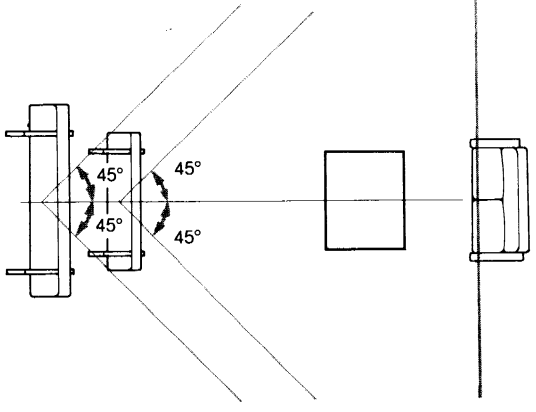
❺ Remove the Lens Cover.

Note:

- The projector and the screen should be located on the same horizontal level. Avoid setting them on a slanting floor.
When placing the projector or the screen on an uneven floor, turn counterclockwise the rubber feet on the bottom front of the projector or on the bottom of the screen supports until the set is level.
- The projector and the screen should be installed perpendicular to each other. (This can be checked in the following registration adjustments.)

Audience area

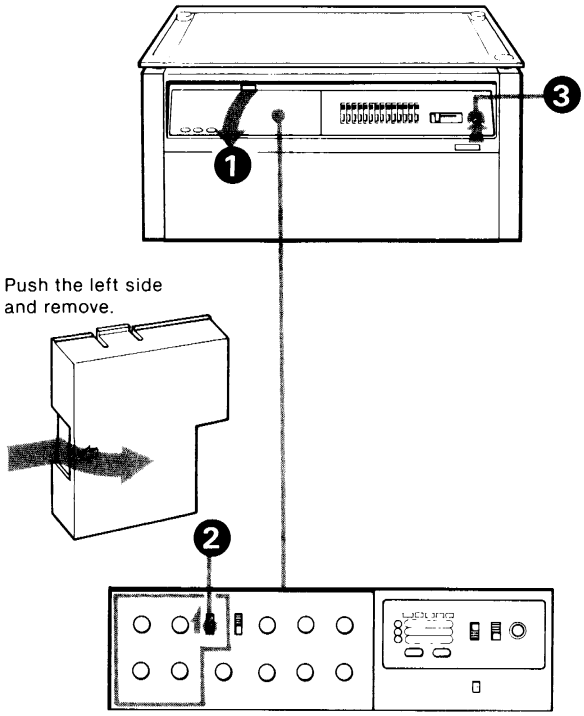




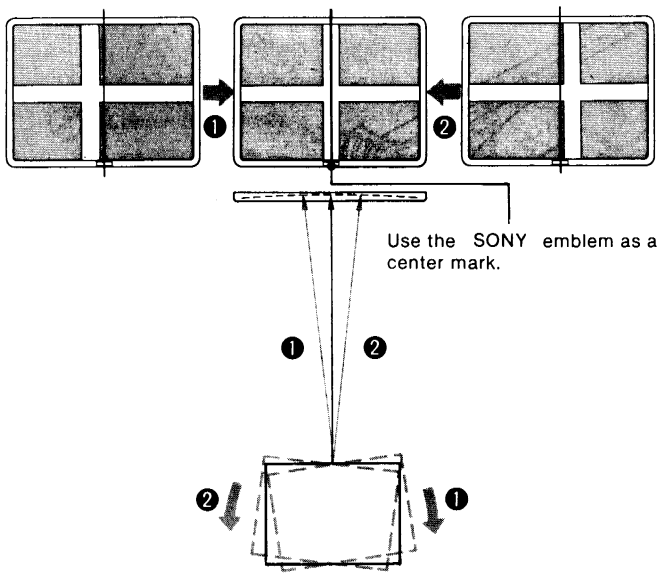
1-6. REGISTRATION ADJUSTMENT (CUSTOMER CONTROLS)

Preparation

❶ Open the front panel and remove the cover to expose the controls.



❷ Set the TEST/NORMAL Switch to TEST.
❸ Press the POWER Button to switch on the projector.
A built-in test pattern will be displayed on the screen.
❹ Check that the white vertical line is displayed at the horizontal center of the screen. If it is not, move the right or left side of the projector slightly to center the line (to install the projector perpendicular to the screen).

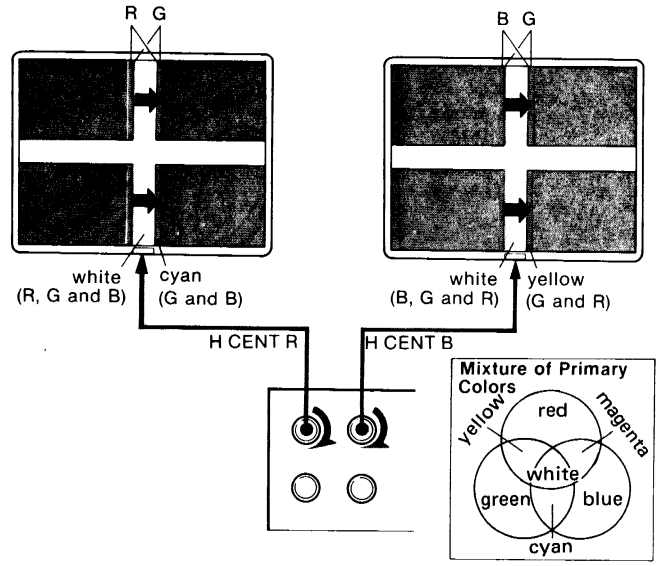


Adjustment

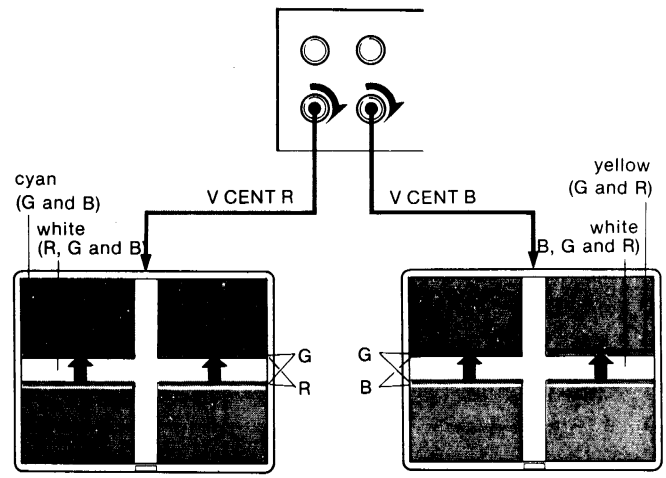
After transporting the set from one place to another, the red, green and blue lines may not be superimposed (the cross may not be seen as white).
If this symptom is noticed, perform the registration adjustment yourself. Should the difficulty persist, contact your Sony dealer.

As you turn the controls clockwise, the lines move in the direction indicated in the illustrations. To move the lines in the opposite direction, turn the controls counterclockwise.

❶ Adjust the H CENT B and H CENT R Controls to converge the blue and red vertical lines with the green line.

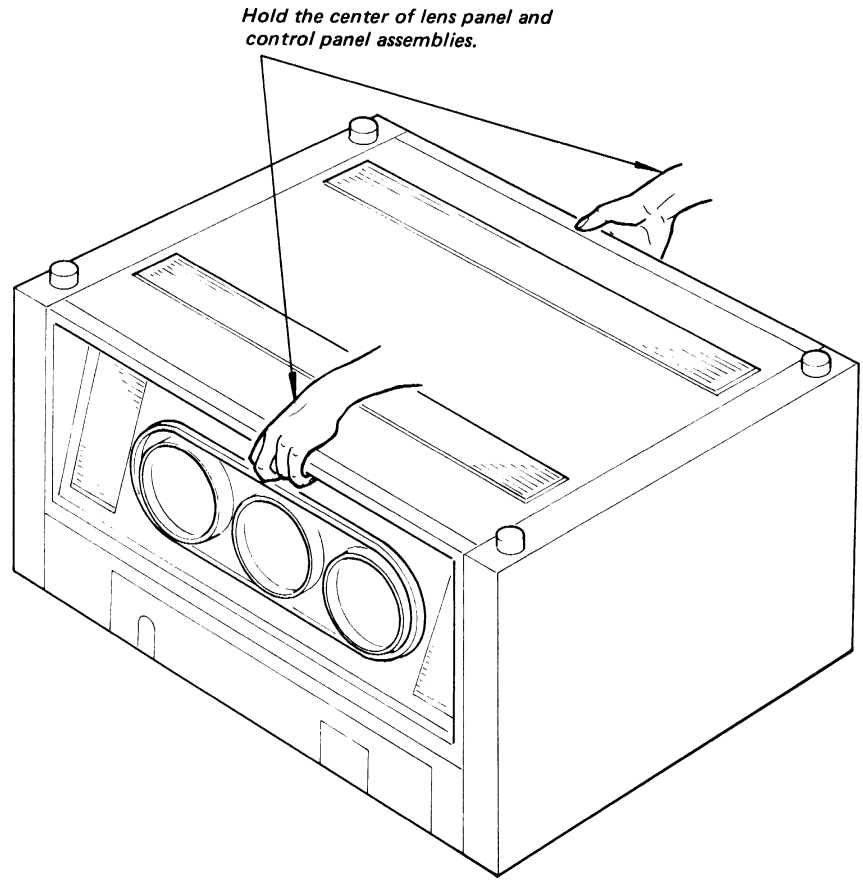


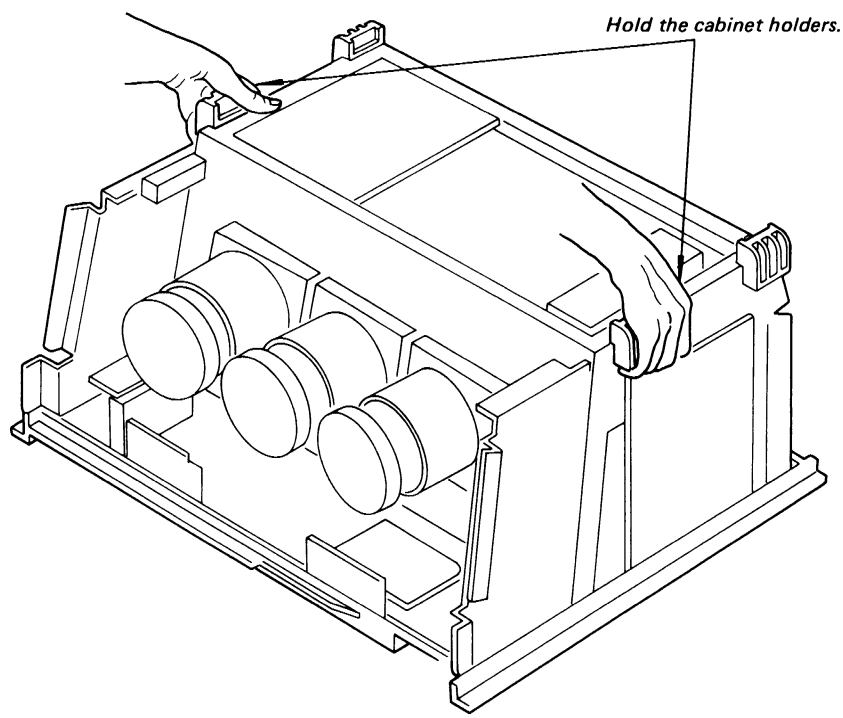
❷ Adjust the V CENT B and V CENT R Controls to converge the blue and red horizontal lines with the green line.



❸ Repeat steps ❶ and ❷ until the cross appears white.
❹ After the adjustment is completed, set the TEST/NORMAL Switch to NORMAL, replace the cover, and close the front panel.

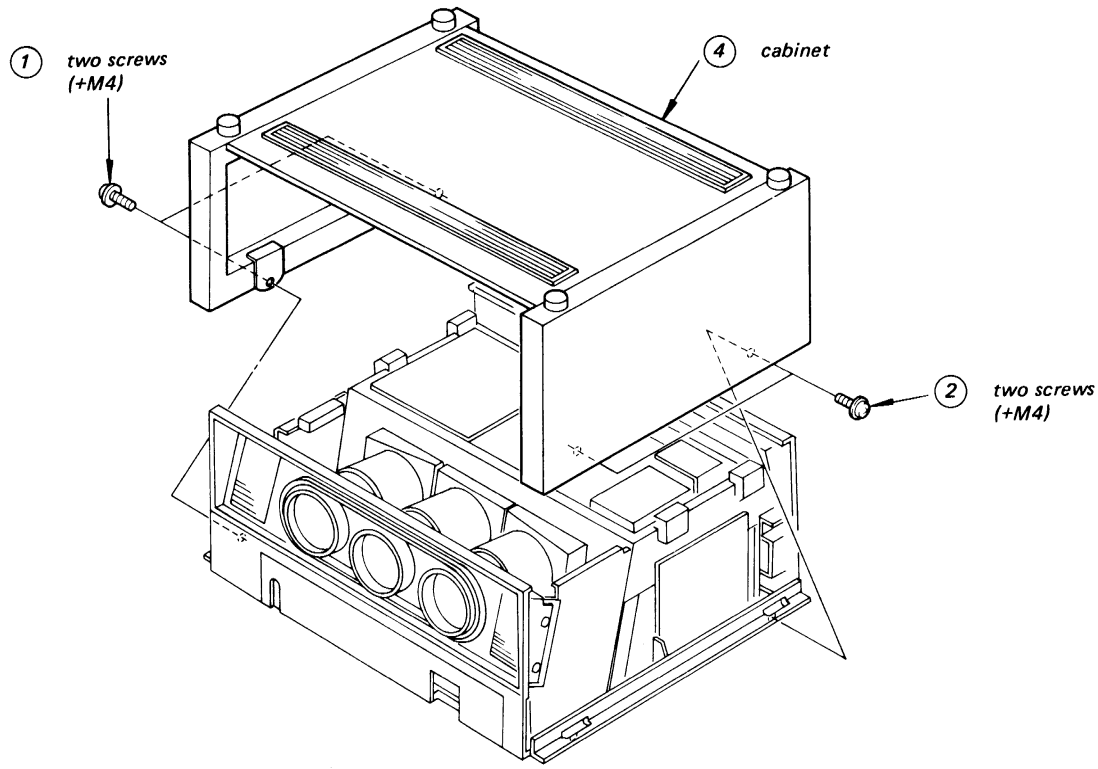
1-7. HOW TO CARRY



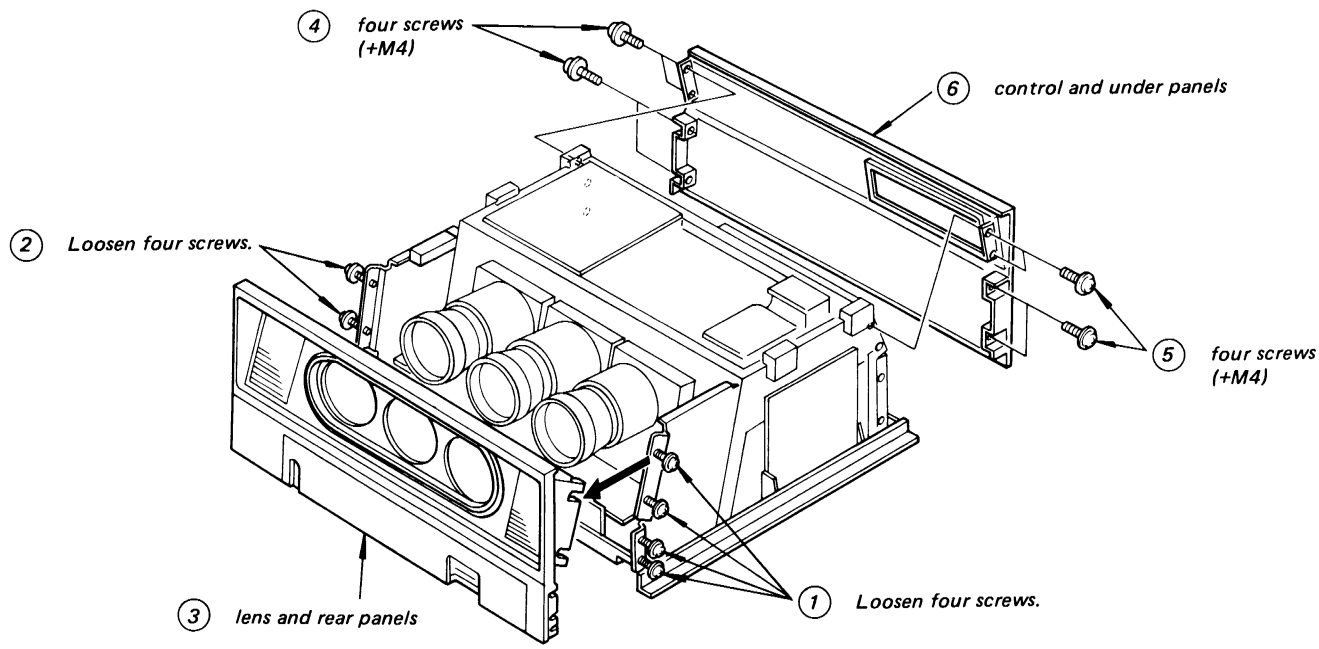


SECTION 2
DISASSEMBLY

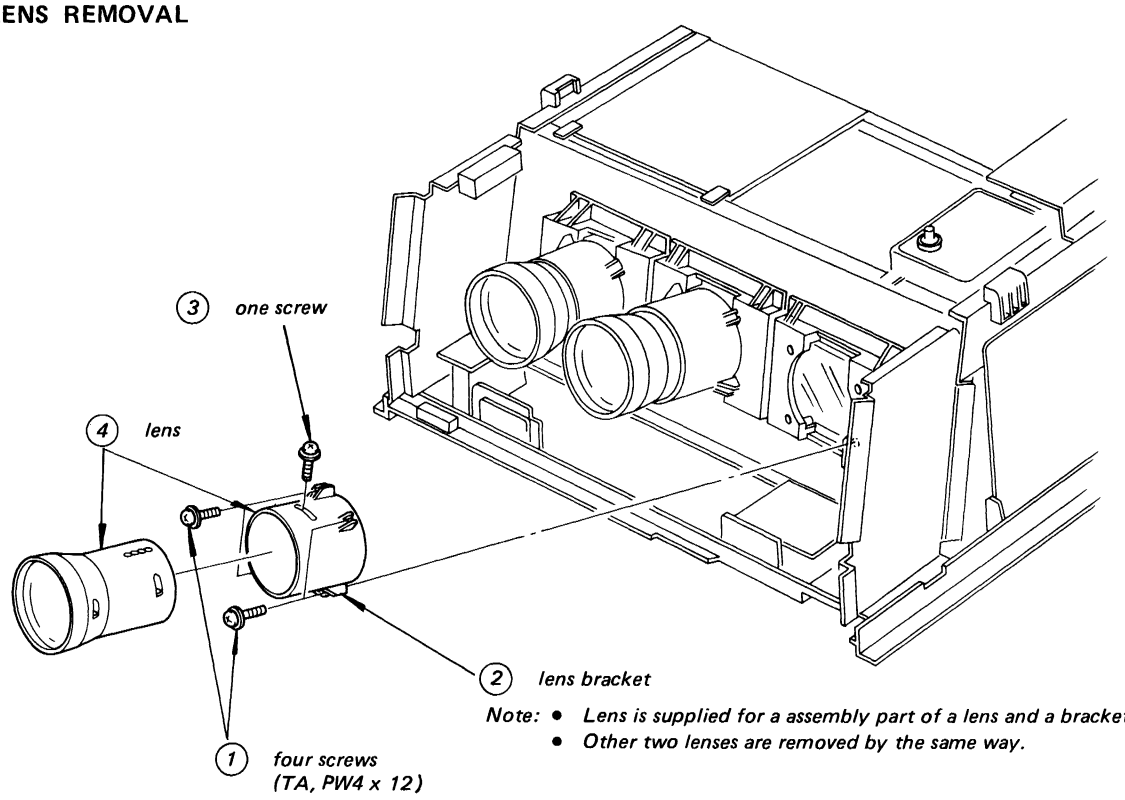
2-1. CABINET REMOVAL



2-2. PANEL REMOVAL



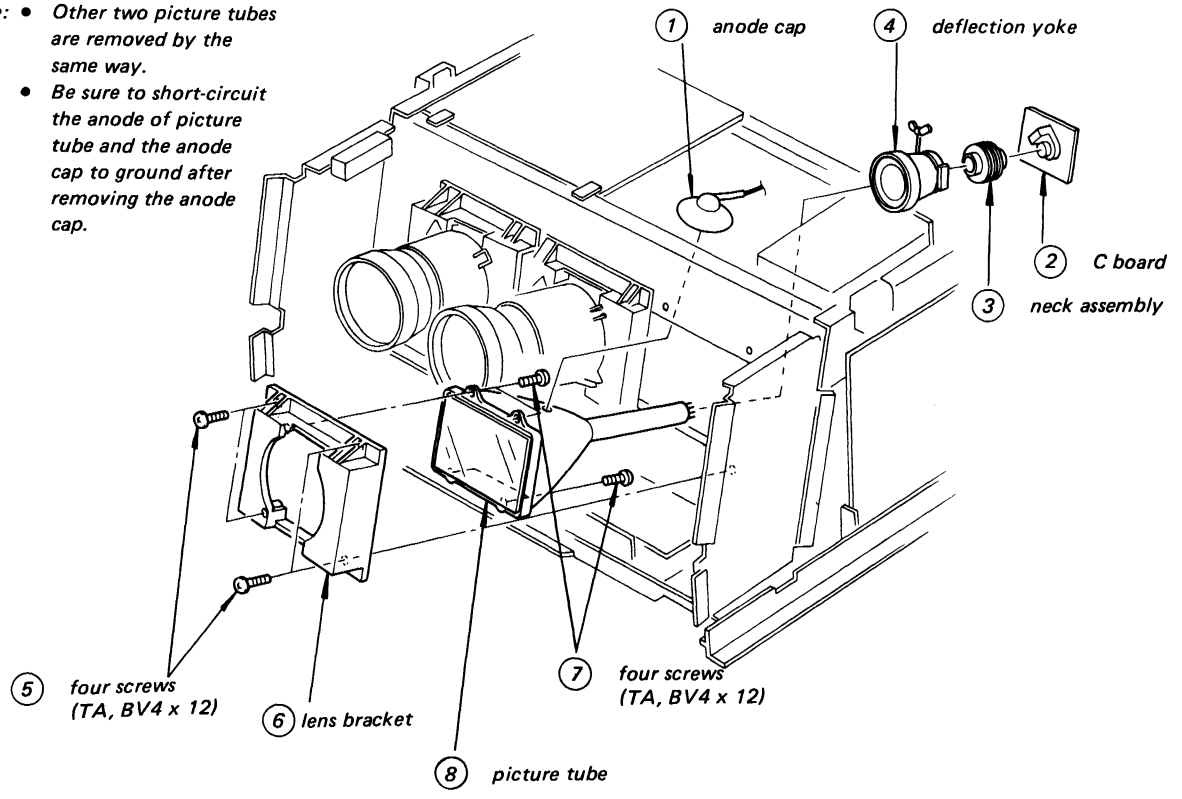
2-3. LENS REMOVAL



Note: • *Lens is supplied for a assembly part of a lens and a bracket.*
• *Other two lenses are removed by the same way.*

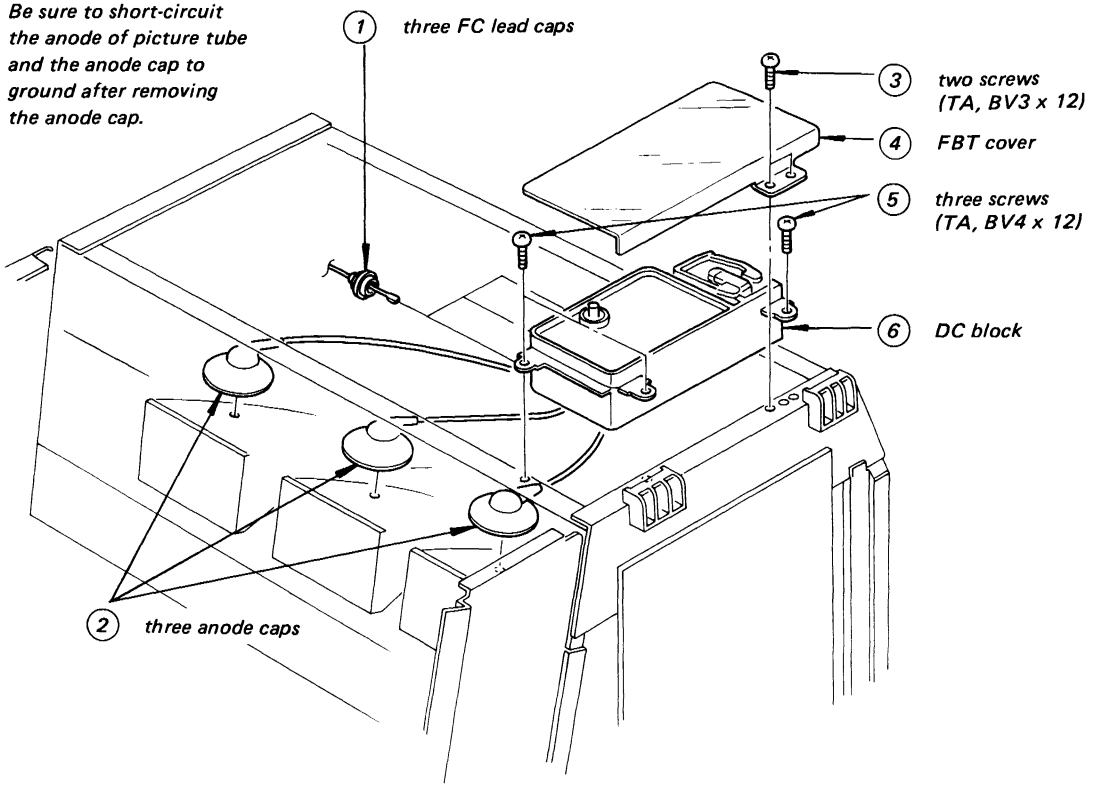
2-4. PICTURE TUBE REMOVAL

Note: • *Other two picture tubes are removed by the same way.*
• *Be sure to short-circuit the anode of picture tube and the anode cap to ground after removing the anode cap.*

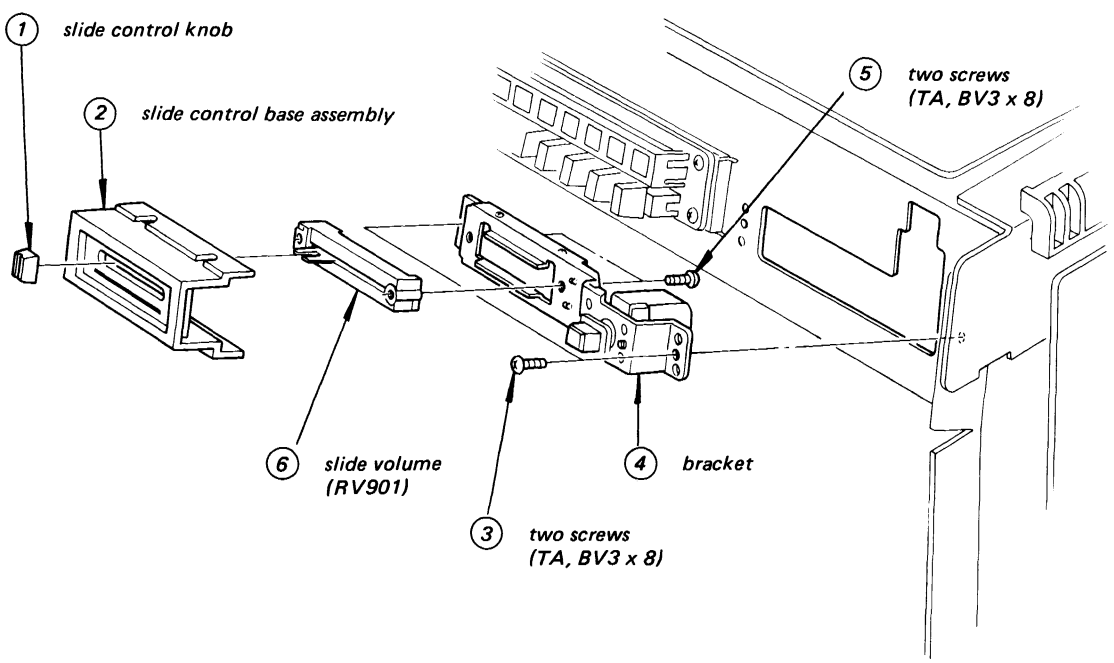


2-5. DC BLOCK REMOVAL

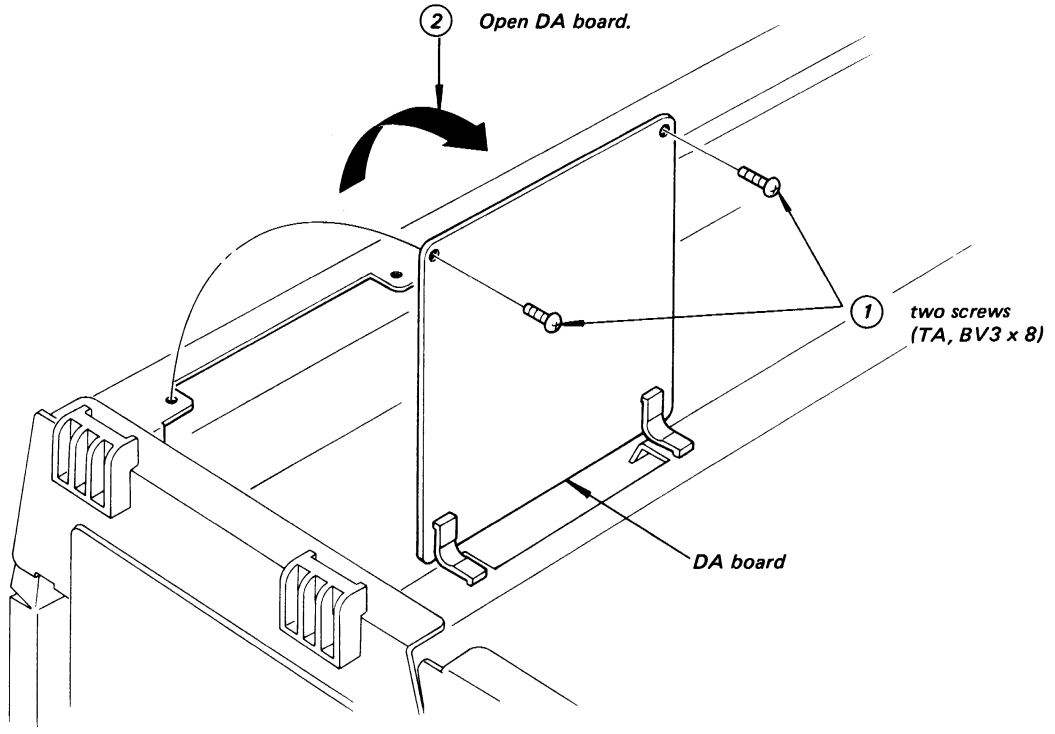
Note: Be sure to short-circuit the anode of picture tube and the anode cap to ground after removing the anode cap.



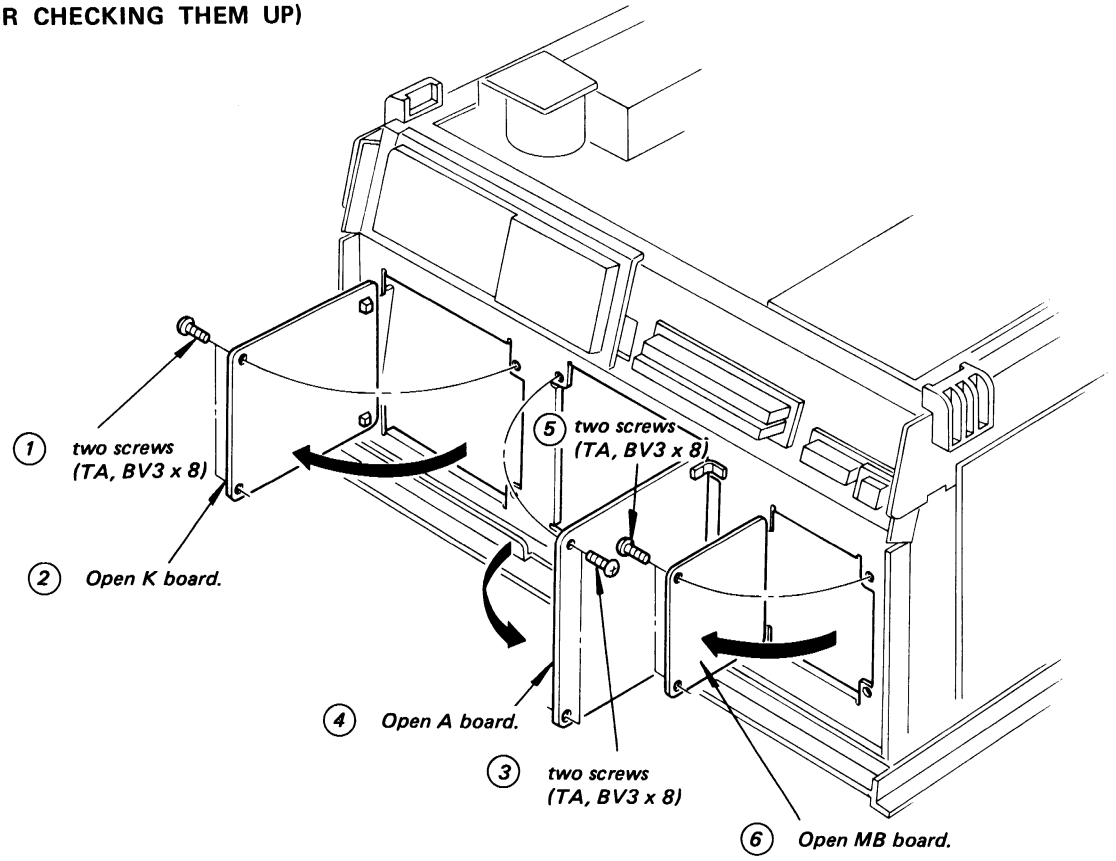
2-6. SLIDE VOLUME REMOVAL



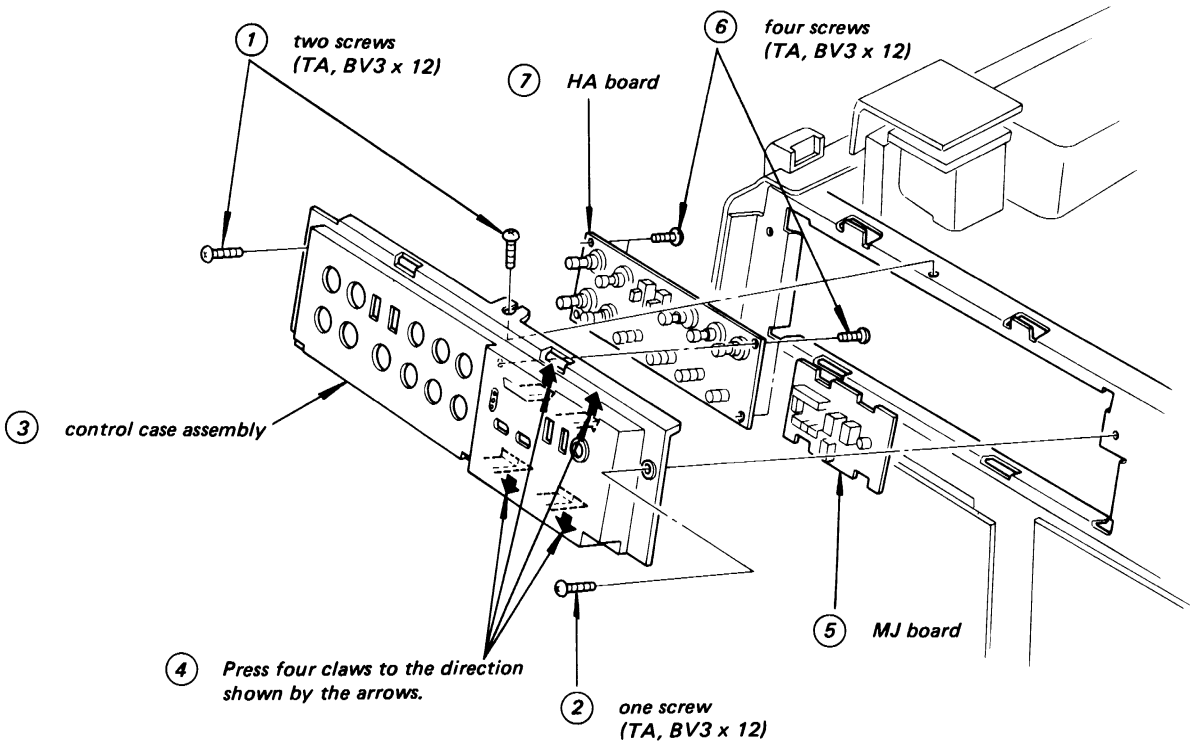
2-7. DA BOARD REMOVAL (FOR CHECKING IT UP)



2-8. K, A AND MB BOARDS REMOVAL (FOR CHECKING THEM UP)



2-9. HA AND MJ BOARDS REMOVAL (FOR CHECKING THEM UP)



SECTION 3
SETUP ADJUSTMENTS

3-1. REGISTRATION ADJUSTMENT

1. PREPARATION

(1) Degauss the whole chassis.
(2) Set the three deflection yoke and neck assemblies as shown in Fig. 3-1.

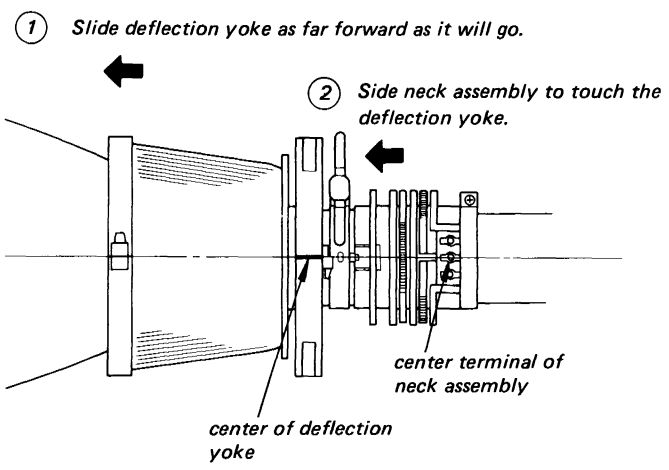


Fig. 3-1

(3) Set the adjustable resistors on DA board to a mechanical center. Set the H and V CENT controls on the control panel to mechanical center.
(4) Receive a off-air signal.
(5) Swtich and controls should be set as follows.
BRIGHT control, PICTURE control ..... fully clockwise
TEST/NORMAL switch ... TEST position
HATCH/BAR switch ..... HATCH position
(6) Set the projection unit and screen specified position on page 14.

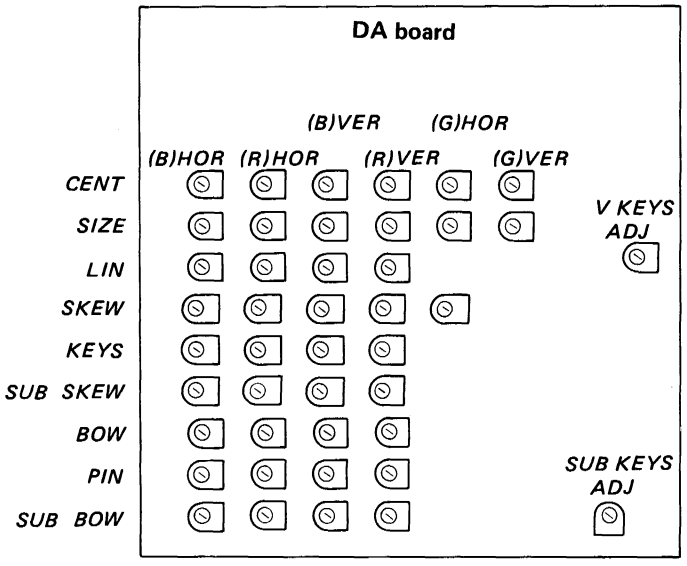


Fig. 3-2

2. FOCUS ADJUSTMENT

(1) Cover the red and blue lenses with caps or equivalents.
(2) Loosen the screw on the green lens as shown in Fig. 3-3.

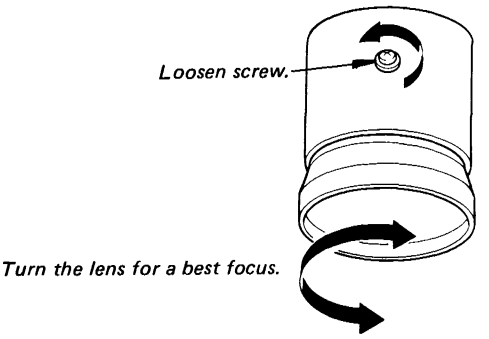


Fig. 3-3

(3) Turn the green lens to obtain a best focus.
(4) Adjust the focus control for a best focus as shown in Fig. 3-4.

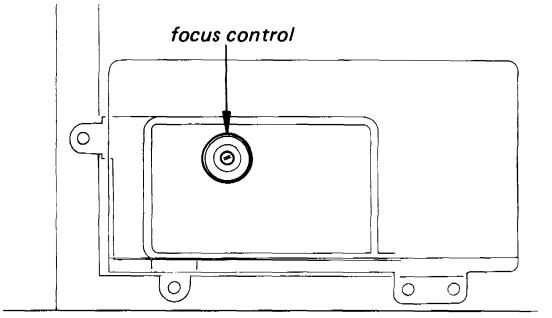


Fig. 3-4

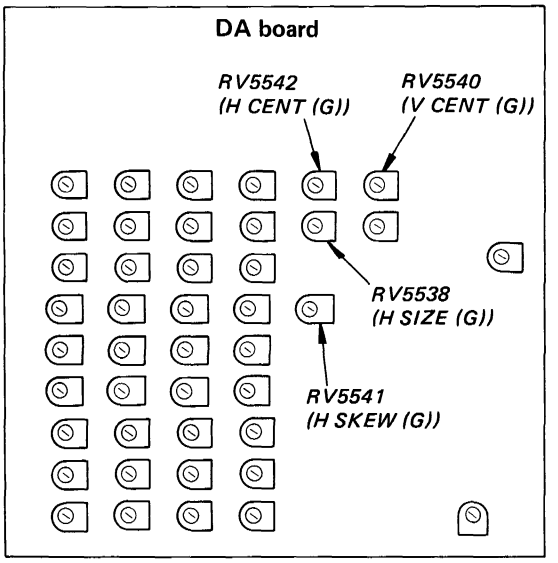


Fig. 3-5

(5) Repeat steps (3) and (4) sevral times.
(6) Tighten the screw on the green lens in position.
(7) Remove the cap on the red lens and cover the green lens with a cap or equivalent.
(8) Loosen the screw and turn the red lens for a best focus.
(9) Tighten the screw on the red lens in position.
(10) Remove the cap on the blue lens and cover the red lens with a cap or equivalent.
(11) Loosen the screw and turn the blue lens for a best focus.
(12) Tighten the screw on the blue lens in position.
(13) Remove the caps.

3. GREEN PICTURE ADJUSTMENT

(1) Cover the red and blue lenses with caps equivalents.
(2) Adjust RV5542 (H CENT (G)) and RV5540 (V CENT (G)) to center the picture.
(3) Rotate the green deflection yoke to make the horizontal center line of cross-hatch pattern horizontal as shown in Fig. 3-6.

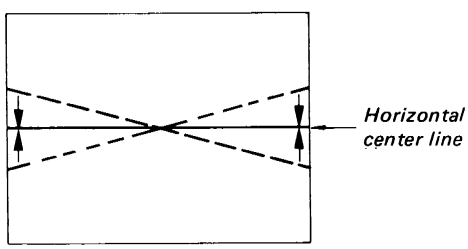


Fig. 3-6

(4) Tighten the deflection yoke screw in position.
(5) Position the green neck assembly as shown in Fig. 3-1. and tighten the neck assembly screw in position.
(6) Adjust RV5541 (H SKEW (G)) to make the vertical center line of cross-hatch pattern vertical as shown in Fig. 3-7.

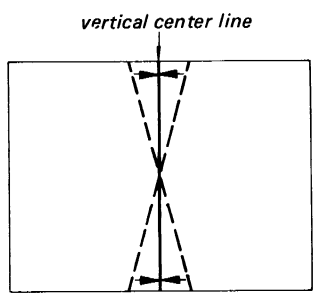


Fig. 3-7

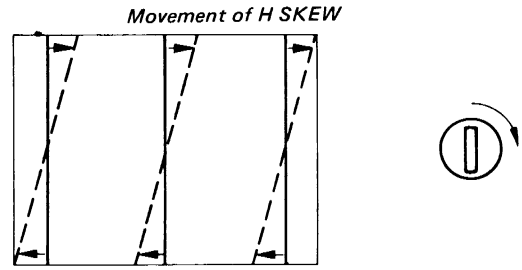


Fig. 3-8

(7) Set the TEST/NORMAL switch to NORMAL position and project an off-air signal.
(8) Adjust RV5538 (H SIZE (G)) so that the horizontal picture size is a little less than the screen size.
(9) Adjust RV5542 (H CENT (G)) so that "a" is equal to "b" as shown in Fig. 3-9.

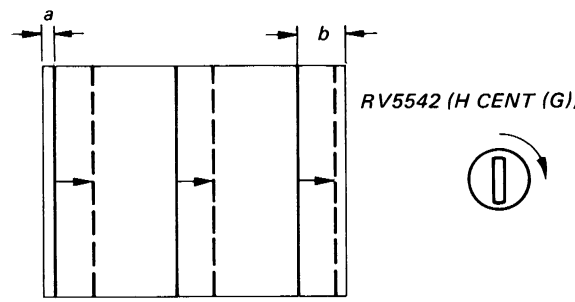


Fig. 3-9

(10) Adjust RV5538 (H SIZE (G)) so that the horizontal picture size is as shown in Fig. 3-10.

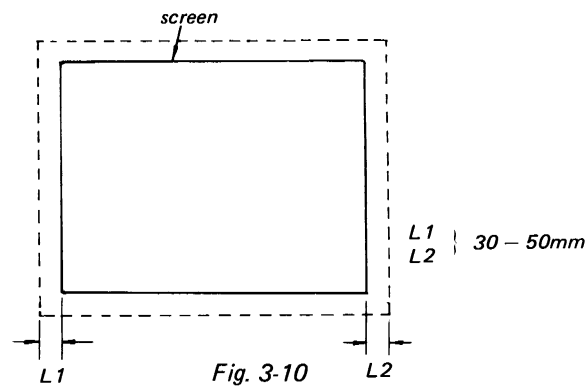


Fig. 3-10

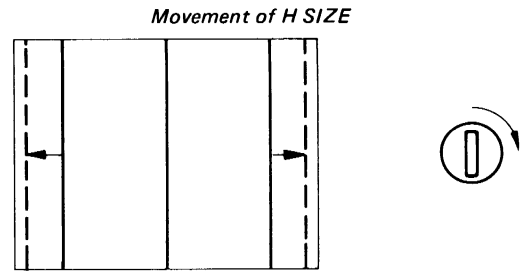


Fig. 3-11

(11) If necessary, adjust RV5542 (H CENT (G)) finely.
(12) Adjust RV5539 (V SIZE (G)) so that the vertical picture size is a little less than the screen size.
(13) Adjust RV5540 (V CENT (G)) so that "a" is equal to "b" as shown in Fig. 3-12.

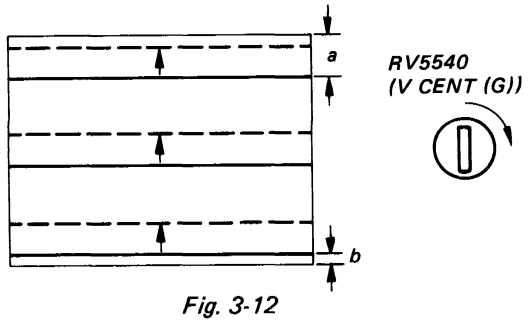


Fig. 3-12

(14) Adjust RV5539 (V SIZE (G)) so that the vartical picture size is as shown in Fig. 3-13.

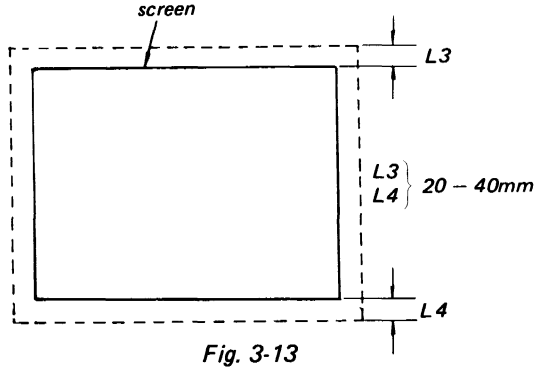


Fig. 3-13

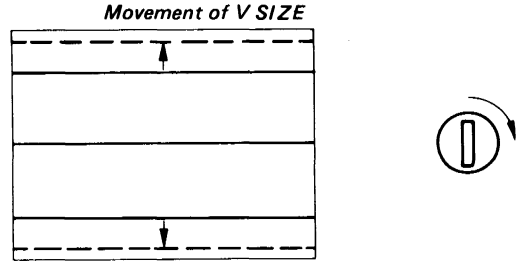


Fig. 3-14

(15) If necessary, adjust RV5540 (V CENT (G)) finely.

Note: After this adjustment, do not touch RV5538 through RV5542 (H SIZE (G), V SIZE (G), V CENT (G), H SKEW (G) and H CENT (G)).

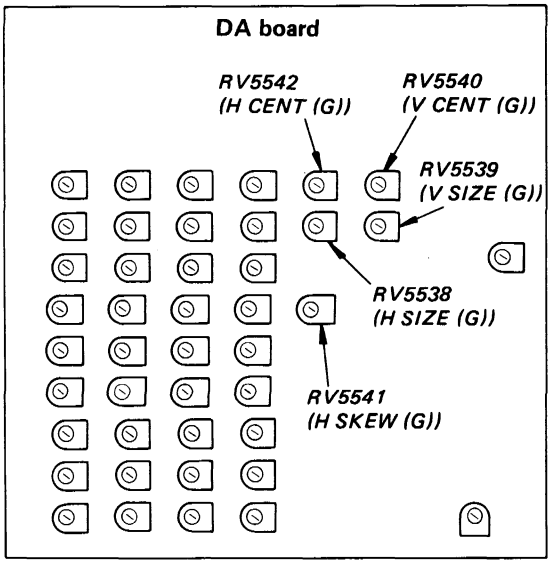


Fig. 3-15

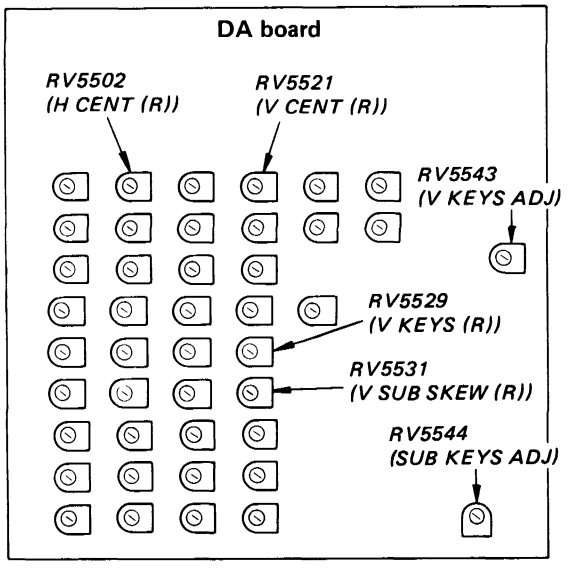


Fig. 3-16

4. PREPARATION OF RED AND GREEN PICTURES ADJUSTMENT

(1) Set the TEST/NORMAL switch to TEST.
(2) Rotate the red deflection yoke so that the red horizontal center line is parallel with the green horizontal center line (Fig. 3-17).

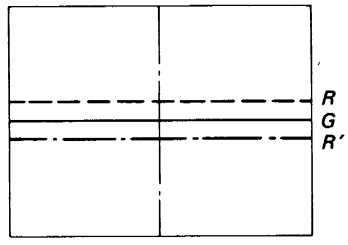


Fig. 3-17

(3) Position the red neck assembly as shown in Fig. 3-18.

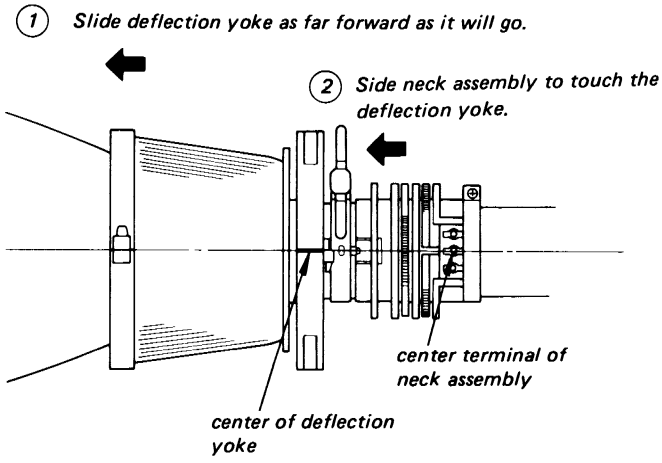


Fig. 3-18

(4) Adjust RV5521 (V CENT (R)) to approach the red horizontal center line to the green horizontal center line properly for easier adjustment.
(5) Adjust RV5502 (H CENT (R)) to approach the red vertical center line to the green vertical center line properly for easier adjustment.
(6) Adjust RV5543 (V KEYS ADJ) so that the red horizontal center line does not move upward or downward to turn RV5529 (V KEYS (R)). (Fig. 3-19)
(7) Adjust RV5544 (SUB KEYS ADJ) so that the red horizontal center line does not rotate to turn RV5531 (V SUB SKEW (R)). (Fig. 3-20)

Note: After this adjustment, do not touch RV5543 and RV5544.

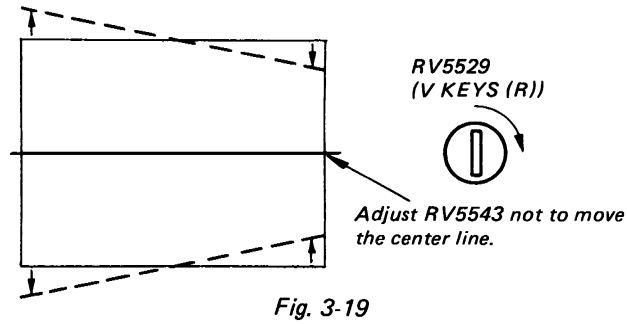


Fig. 3-19

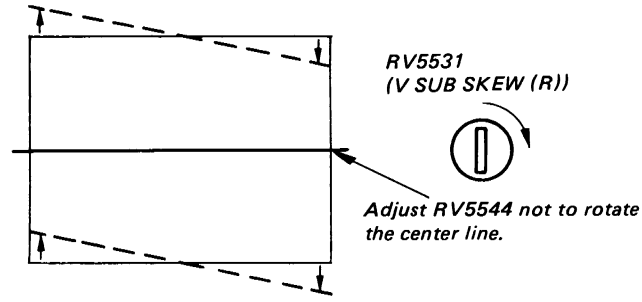


Fig. 3-20

(8) Adjust RV5529 (V KEYS (R)) so that the red horizontal lines are parallel with the green horizontal lines on the upper and lower sides screen (Fig. 3-21).

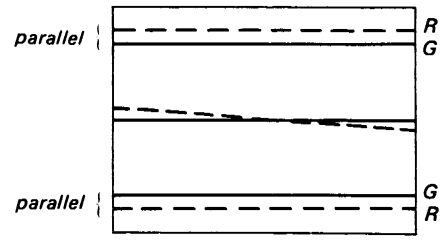


Fig. 3-21

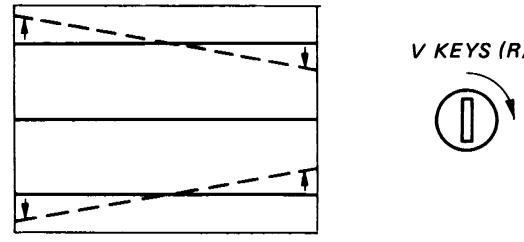


Fig. 3-22

(9) Adjust RV5508 (H SKEW (R)) so that the red vertical center line is parallel with the green vertical center line (Fig. 3-23).

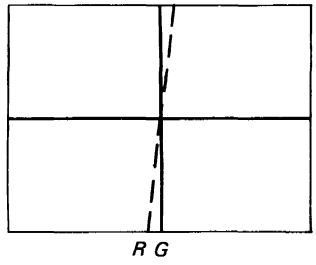


Fig. 3-23

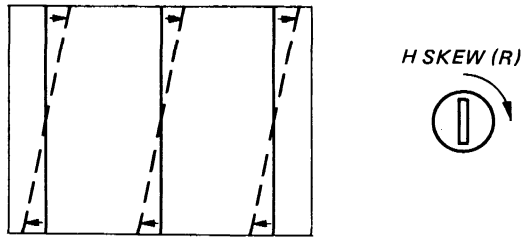


Fig. 3-24

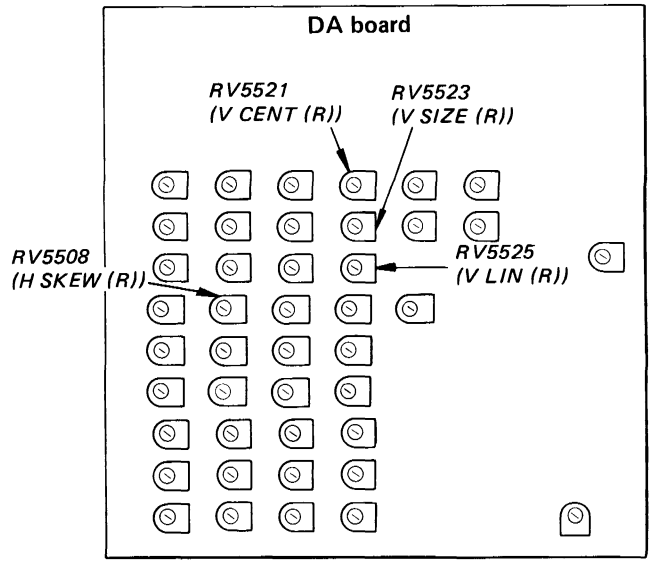


Fig. 3-25

5. VERTICAL ADJUSTMENT OF RED AND GREEN PICTURE

(1) Set the TEST/NORMAL switch to TEST.
(2) Rotate the red deflection yoke so that the red horizontal center line coincide with the green horizontal center line or the left and right spaces are equall as shown in Fig. 3-26.

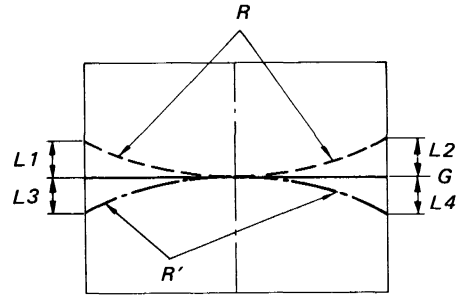


Fig. 3-26

(3) Tighten the red deflection yoke screw in position.
(4) Position the red neck assembly as shown in Fig. 3-27, and tighten the neck assembly screw in position.

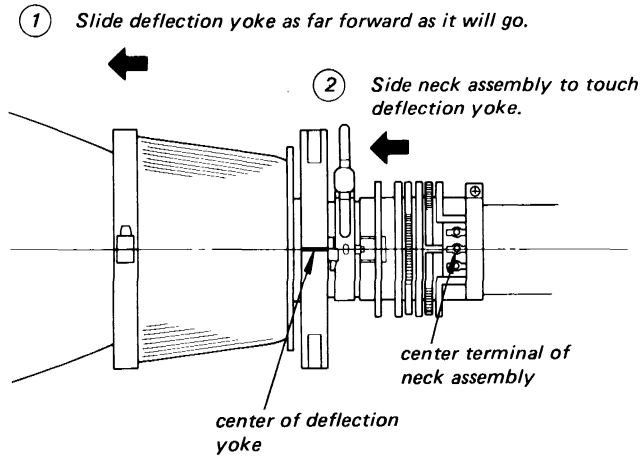


Fig. 3-27

(5) Adjust RV5523 (V SIZE (R)) so that the red horizontal lines coincide with the green horizontal lines or "L1" is equal to "L2" in the middle screen as shown in Fig. 3-28.

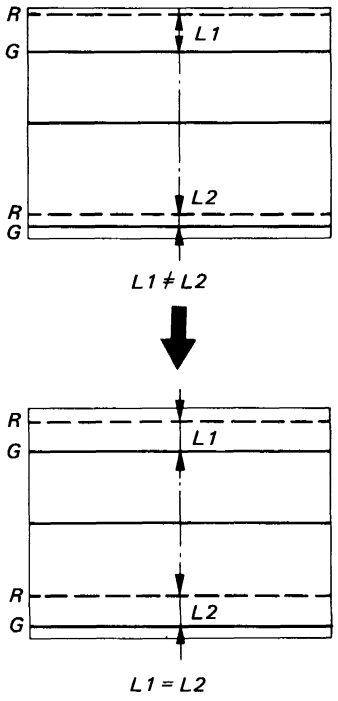


Fig. 3-28

(6) Adjust RV5525 (V LIN (R)) so that "L1", "L2" and "L3" are equal in the middle screen as shown in Fig. 3-29.

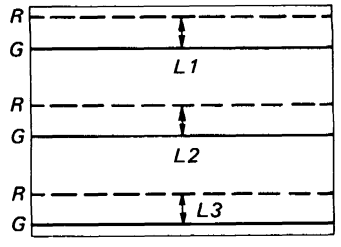


Fig. 3-29

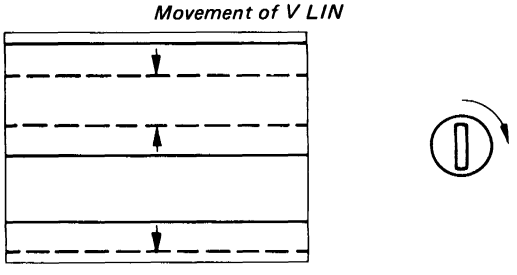


Fig. 3-30

(7) Adjust RV5521 (V CENT (R)) to converge the red horizontal lines and the green horizontal lines in the middle screen as shown in Fig. 3-31.

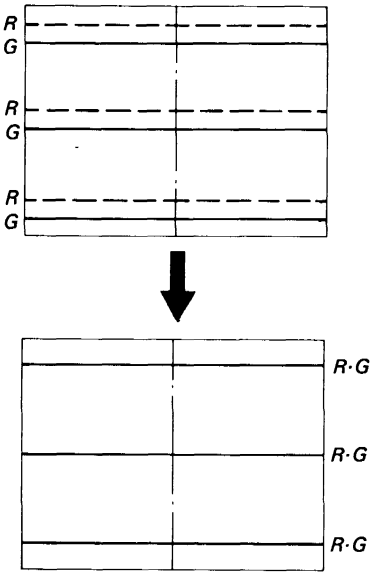


Fig. 3-31

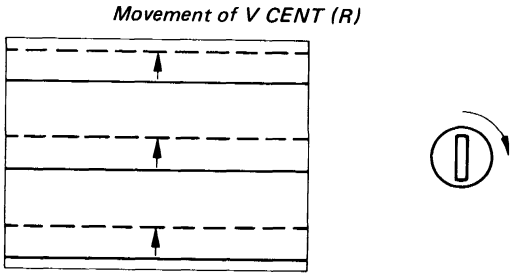


Fig. 3-32

(8) When the red horizontal lines do not coincided with the green horizontal lines as shown in Fig. 3-33, repeat above steps (5) through (7).

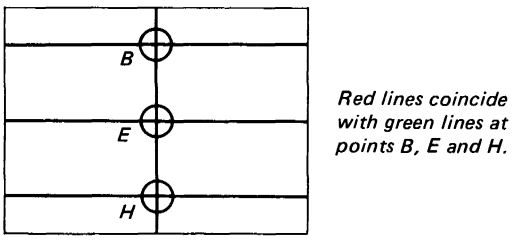


Fig. 3-33

(9) Adjust RV5533 (V BOW (R)) so that the red horizontal center line is parallel with the green horizontal center line.

(10) Adjust RV5521 (V CENT (R)) so that the red horizontal center line coincide with the green horizontal center line at the center of the screen (Fig. 3-35).

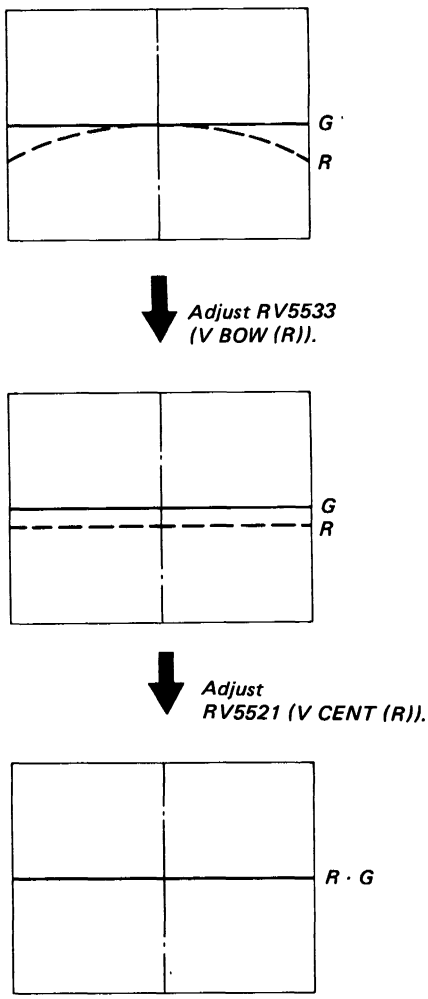


Fig. 3-34

(11) When the red horizontal center line slants, adjust RV5527 (V SKEW (R)) (Fig. 3-35).

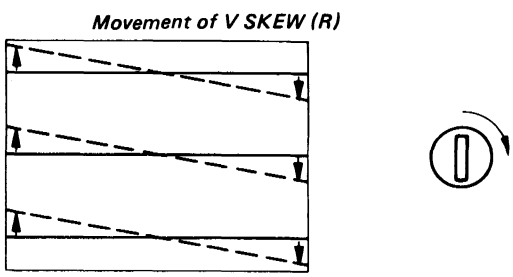


Fig. 3-35

(12) When the red horizontal center line does not coincide with the green horizontal center line as shown in Fig. 3-36, repeat above steps (9) through (11).

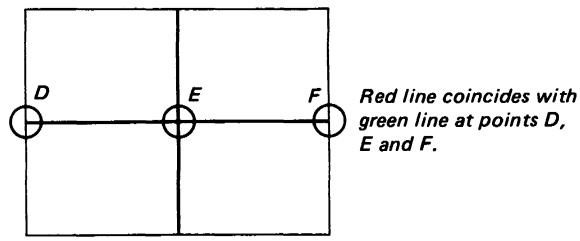


Fig. 3-36

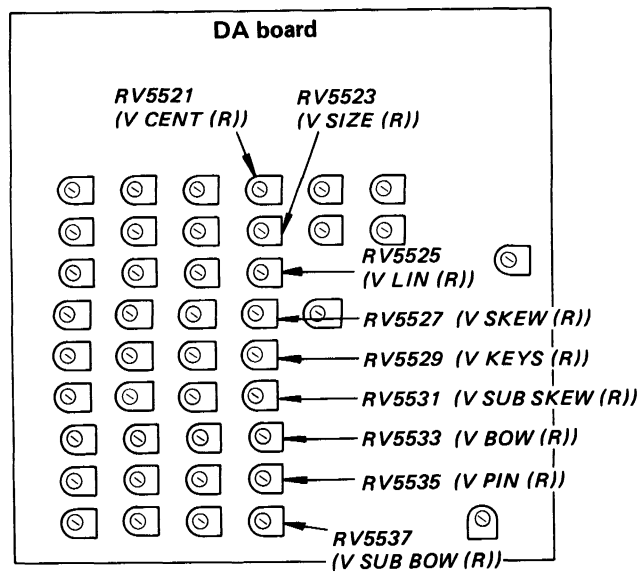


Fig. 3-37

(13) Adjust RV5529 (V KEYS (R)) so that the upper side and lower side red horizontal lines are parallel (Fig. 3-38).

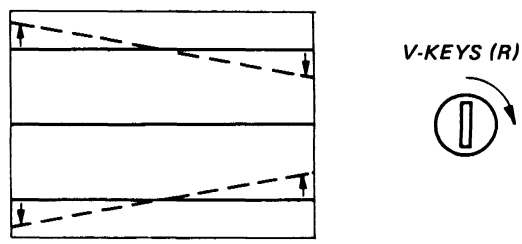


Fig. 3-38

(14) Adjust RV5527 (V SKEW (R)) so that the red horizontal center line coincide with the green horizontal center line (Fig. 3-36).

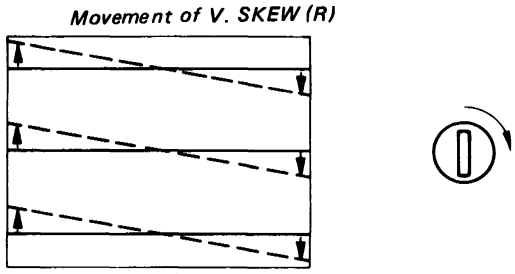


Fig. 3-39

(15) Adjust RV5531 (V SUB SKEW (R)) so that "L1" ("L3") is equal to "L2" ("L4") as shown in Fig. 3-40.

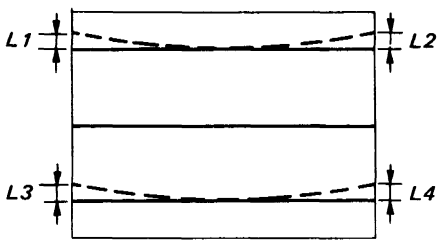


Fig. 3-40

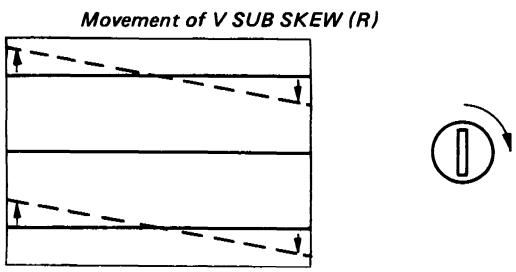


Fig. 3-41

(16) If necessary, repeat above steps (13) through (15).

(17) Adjust RV5535 (V PIN (R)) so that "L1", "L2", "L3" and "L4" are equal as shown in Fig. 3-42.

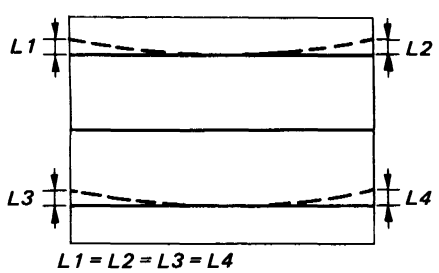


Fig. 3-42

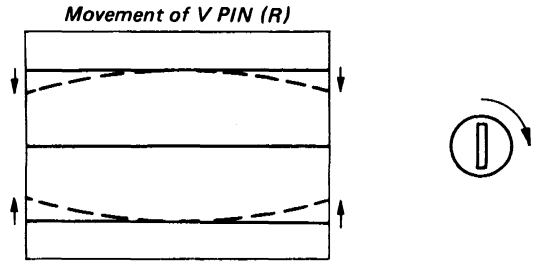


Fig. 3-43

(18) Adjust RV5537 (V SUB BOW (R)) finely so that the red horizontal lines coincide with the green horizontal lines as shown in Fig. 3-44.

(19) When the mis-registration appears on the screen, perform the necessary adjustment finely.

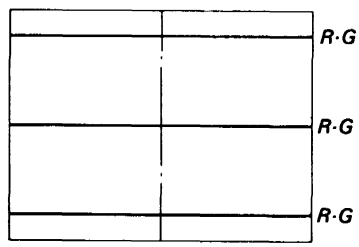


Fig. 3-44

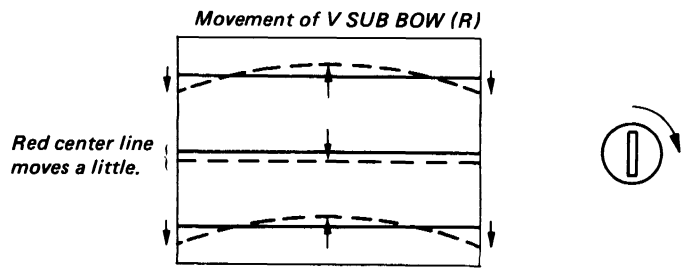


Fig. 3-45

6. HORIZONTAL ADJUSTMENT OF RED AND GREEN PICTURES

(1) Set the HATCH switch to TEST.

(2) Adjust RV5508 (H SKEW (R)) so that the red vertical center line is parallel with the green vertical center line (Fig. 3-46) or "L1" ("L3") is equal to "L2" ("L4") (Fig. 3-47).

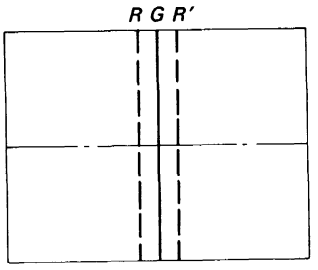


Fig. 3-46

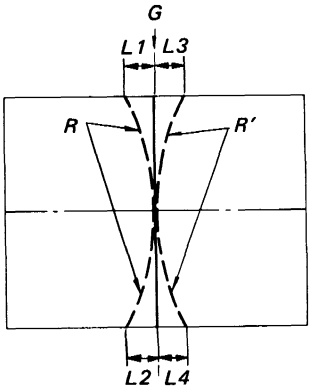


Fig. 3-47

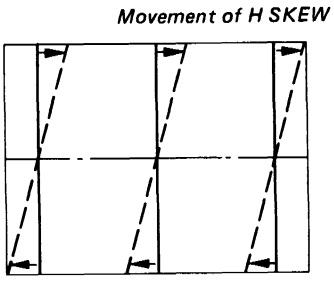


Fig. 3-48

(3) Adjust RV5514 (H BOW (R)) so that the red vertical center line is parallel with the green vertical center line.

(4) Adjust RV5502 (H CENT (R)) to converge the red vertical center line and the green vertical center line as shown in Fig. 3-49.

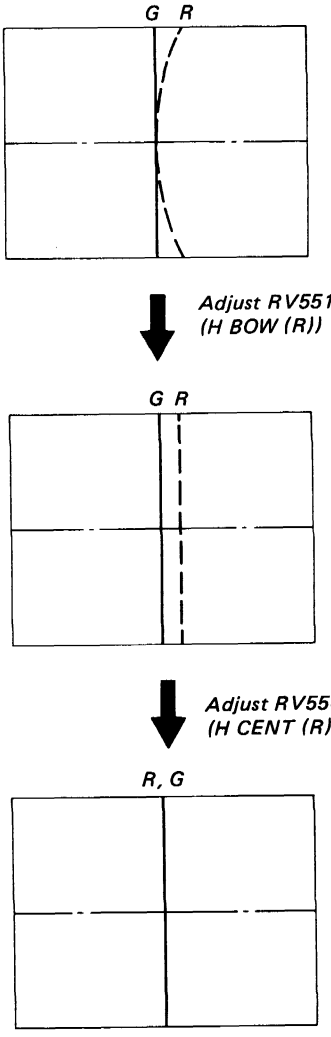


Fig. 3-49

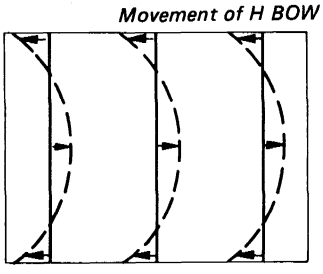


Fig. 3-50

(5) When the red vertical center line does not coincide with the green vertical center line as shown in Fig. 3-51, repeat above steps (2) through (4).

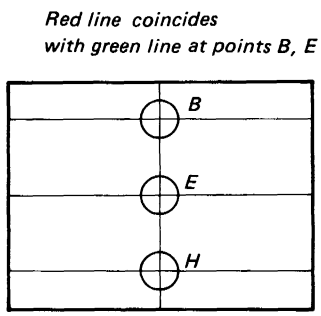


Fig. 3-51

(6) Adjust RV5504 (H SIZE (R)) so that "L1" is equal to "L2" in the middle of screen as shown in Fig. 3-52.

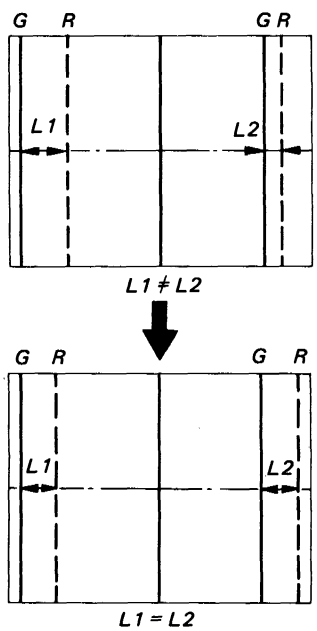


Fig. 3-52

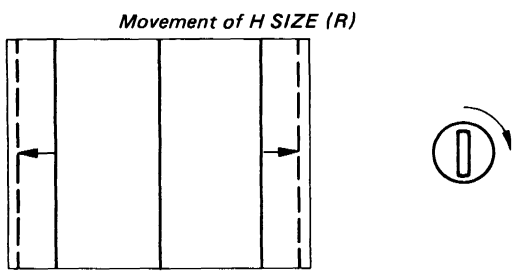


Fig. 3-53

(7) Adjust RV5506 (H LIN (R)) so that "L1", "L2" and "L3" are equal in the middle of screen as shown in Fig. 3-54.

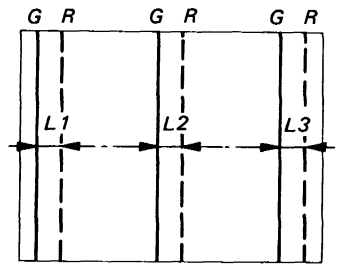


Fig. 3-54

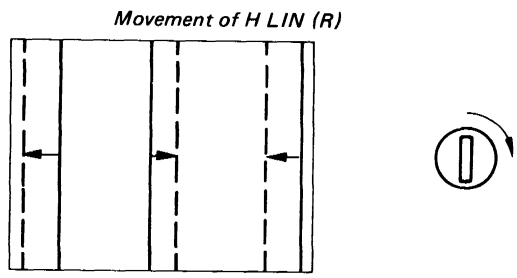


Fig. 3-55

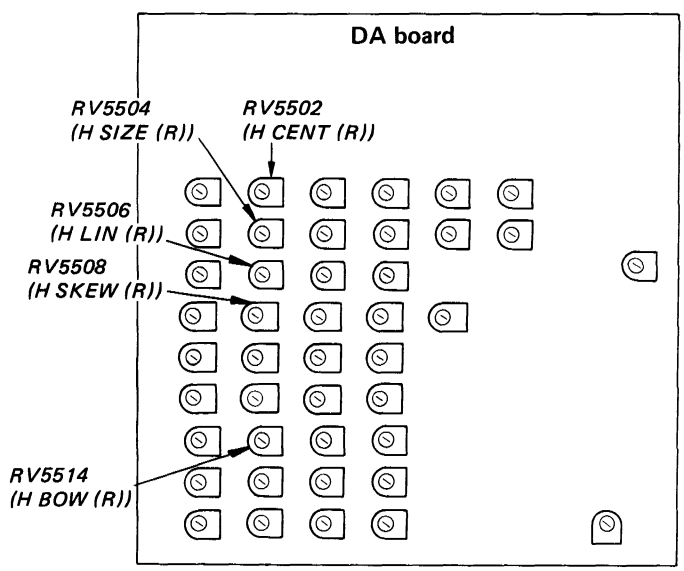


Fig. 3-56

(8) Adjust RV5502 (H CENT (R)) to converge the red vertical lines and the green vertical lines in the middle of screen as shown in Fig. 3-57.

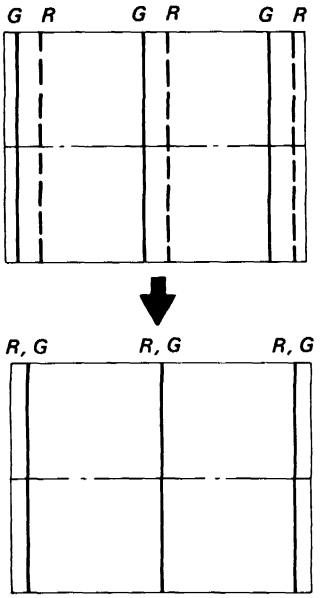


Fig. 3-57

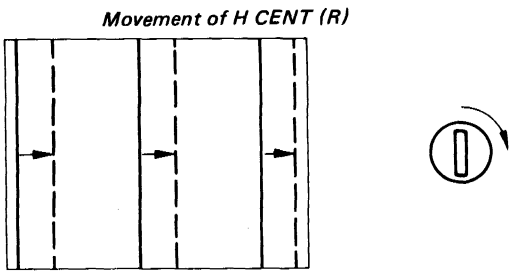


Fig. 3-58

(9) When the red vertical lines do not coincide with the green vertical lines as shown in Fig. 3-59, repeat above steps (6) through (8).

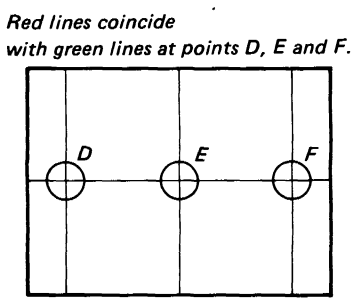


Fig. 3-59

(10) Adjust RV5510 (H KEYS (R)) so that L1 and L2 are equal as shown in Fig. 3-60.

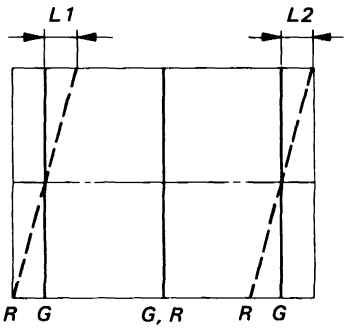


Fig. 3-60

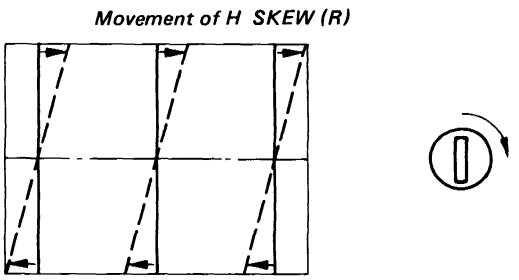


Fig. 3-61

(11) When the red vertical center line slants, adjust RV5508 (H SKEW (R)).

(12) Adjust RV5512 (H SUB SKEW (R)) so that "L1" ("L3") is equal to "L2" ("L4") as shown in Fig. 3-62.

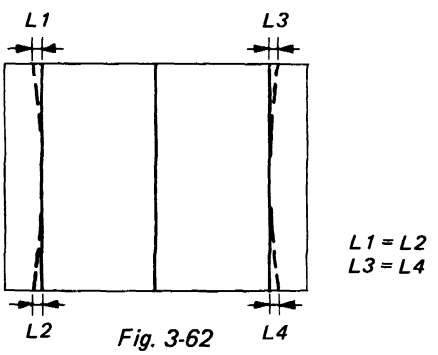


Fig. 3-62

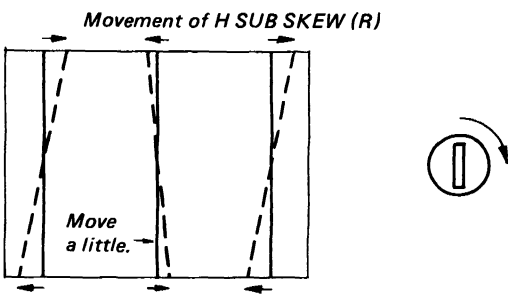


Fig. 3-63

(13) If necessary, repeat above steps (10) through (12).
(14) Adjust RV5517 (H PIN (R)) so that "L1", "L2", "L3" and "L4" are equal as shown in Fig. 3-64.

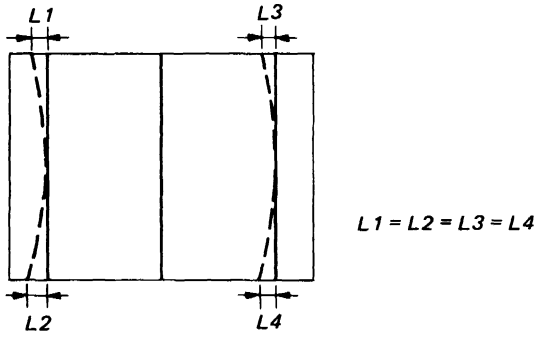


Fig. 3-64

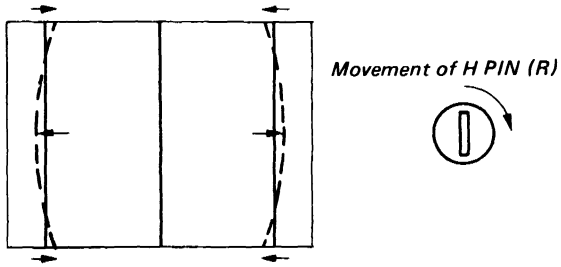


Fig. 3-65

(15) Adjust RV5519 (H SUB BOW (R)) finely so that the red vertical lines coincide with the green horizontal lines as shown in Fig. 3-66.
(16) When the mis-registration appears on the screen, perform the necessary adjustment finely.

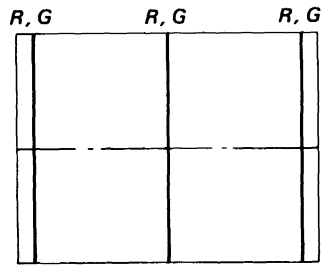


Fig. 3-66

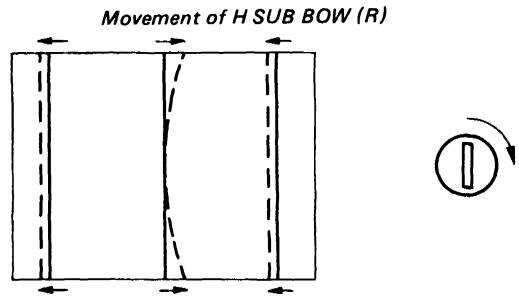


Fig. 3-67

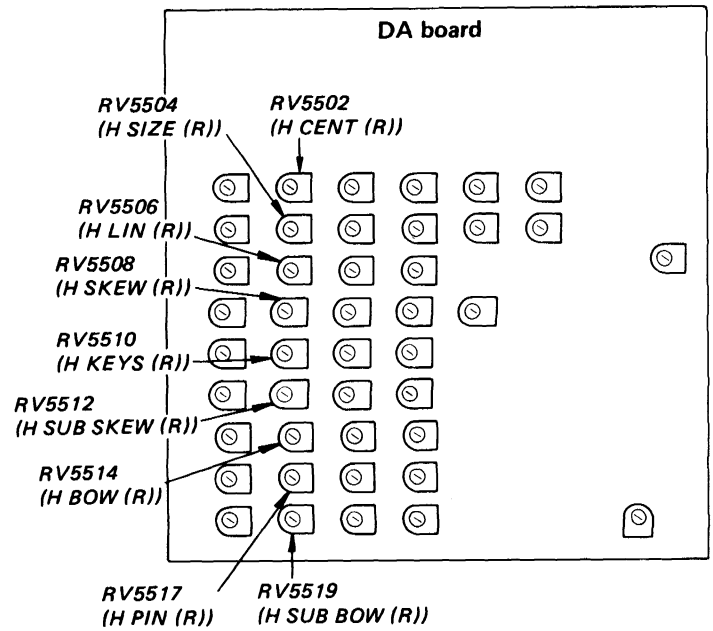


Fig. 3-68

7. VERTICAL AND HORIZONTAL ADJUSTMENTS OF RED AND BLUE PICTURES

Note: Perform each adjustment for the red and blue registration by the way as same as the green and red registration adjustment (Refer to the procedures 4, 5 and 6).
Do not touch RV5543 (V KEYS ADJ) and RV5544 (SUB KEYS ADJ) at the red and blue registration adjustment.

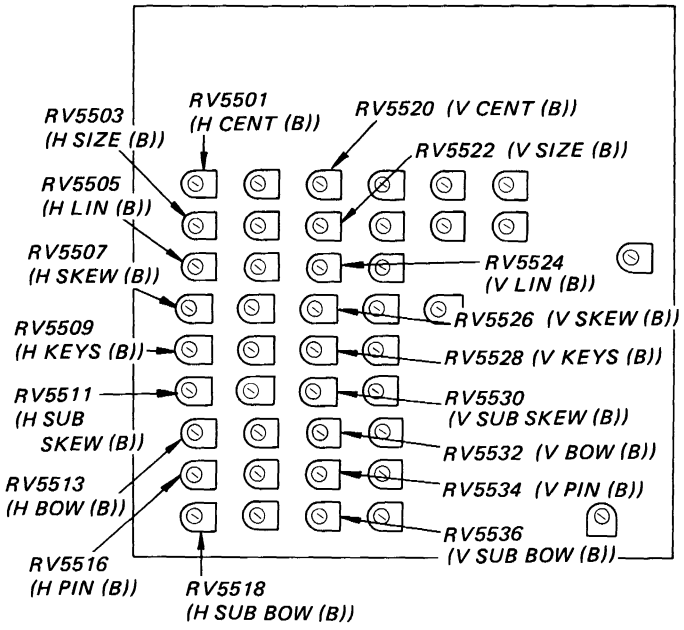


Fig. 3-69

Preparation of Red and Blue Pictures Adjustment

(1) Rotation of blue deflection yoke.
(2) Rotation of blue neck assembly.
(3) RV5520 (V CENT (B))
(4) RV5501 (H CENT (B))
(5) RV5528 (V KEYS (B))
(6) RV5507 (H SKEW (B))

Vertical Adjustment of Red and Blue Pictures

(1) Rotation of blue deflection yoke.
(2) Rotation of blue neck assembly.
(3) RV5522 (V SIZE (B))
(4) RV5524 (V LIN (B))
(5) RV5520 (V CENT (B))
(6) If necessary, repeat above steps.
(7) RV5532 (V BOW (B))
(8) RV5520 (V CENT (B))
(9) RV5526 (V SKEW (B))
(10) If necessary, repeat above steps (7) through (9).
(11) RV5528 (V KEYS (B))
(12) RV5526 (V SKEW (B))
(13) RV5530 (V SUB SKEW (B))
(14) If necessary, repeat above steps (11) through (13).
(15) RV5534 (V PIN (B))
(16) RV5536 (V SUB BOW (B))
(17) Fine adjustment.

Horizontal Adjustment of Red and Blue Pictures

(1) RV5507 (H SKEW (B))
(2) RV5513 (H BOW (B))
(3) RV5501 (H CENT (B))
(4) If necessary, repeat above steps.
(5) RV5503 (H SIZE (B))
(6) RV5505 (H LIN (B))
(7) RV5501 (H CENT (B))
(8) If necessary, repat above steps (5) through (7).
(9) RV5509 (H KEYS (B))
(10) RV5507 (H SKEW (B))
(11) RV5511 (H SUB SKEW (B))
(12) If necessary, repeat above steps (9) through (11).
(13) RV5516 (H PIN (B))
(14) RV5518 (H SUB BOW (B))
(15) Fine adjustment.

3-2. WHITE BALANCE ADJUSTMENT

(1) Control and switch should be set as follows:
TEST/NORMAL switch . . . .TEST
COLOR control . . . . . .fully counterclockwise
(2) Tune in an off-air signal.
(3) Set RV5451 (SCRN-B), RV5452 (SCRN-G) and RV5453 (SCRN-R) to mechanical-mid position.
(4) Turn the BRIGHT and the PICTURE controls fully counterclockwise.
(5) Cover the red and blue lenses with caps or equivalents.
(6) Turn RV5452 (SCRN-G) slowly to obtain a faintly visible cross-hatch on the screen.
(7) Remove the caps.
(8) Adjust RV5451 (SCRN-B) and RV5453 (SCRN -R) for best white balance (nautral gray) of faint cross-hatch.
(9) Turn the BRIGHT and the PICTURE controls fully clockwise.
(10) Adjust RV310 (R DRIVE), RV311 (B DRIVE) for best white balance.
(11) Repeat the above steps (8) through (11) two or three times.

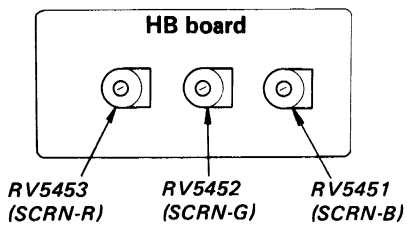


Fig. 3-70

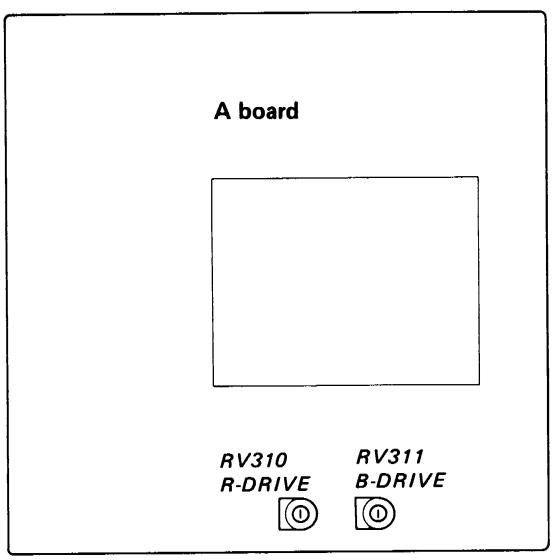


Fig. 3-71

SECTION 4
CIRCUIT ADJUSTMENTS

Note:

(1) TEST EQUIPMENT REQUIRED

1. Variable auto-transformer
2. Isolation transformer
3. Electrostatic voltmeter
   or
   Digital multimeter
   (Capable of measuring the voltage is more than 1,100V).
4. Frequency counter
5. Color-bar/pattern generator

(2) INPUT SIGNAL

When making these adjustment, supply a white pattern, a color-bar or an off-air signal.

(3) CONTROLS AND SWITCHES SETTING

Controls and switches should be set as follows when making checks and adjustments unless otherwise noted.

PICTURE control
BRIGHT control
COLOR control
HUE control
V HOLD control
} Set for a best picture.

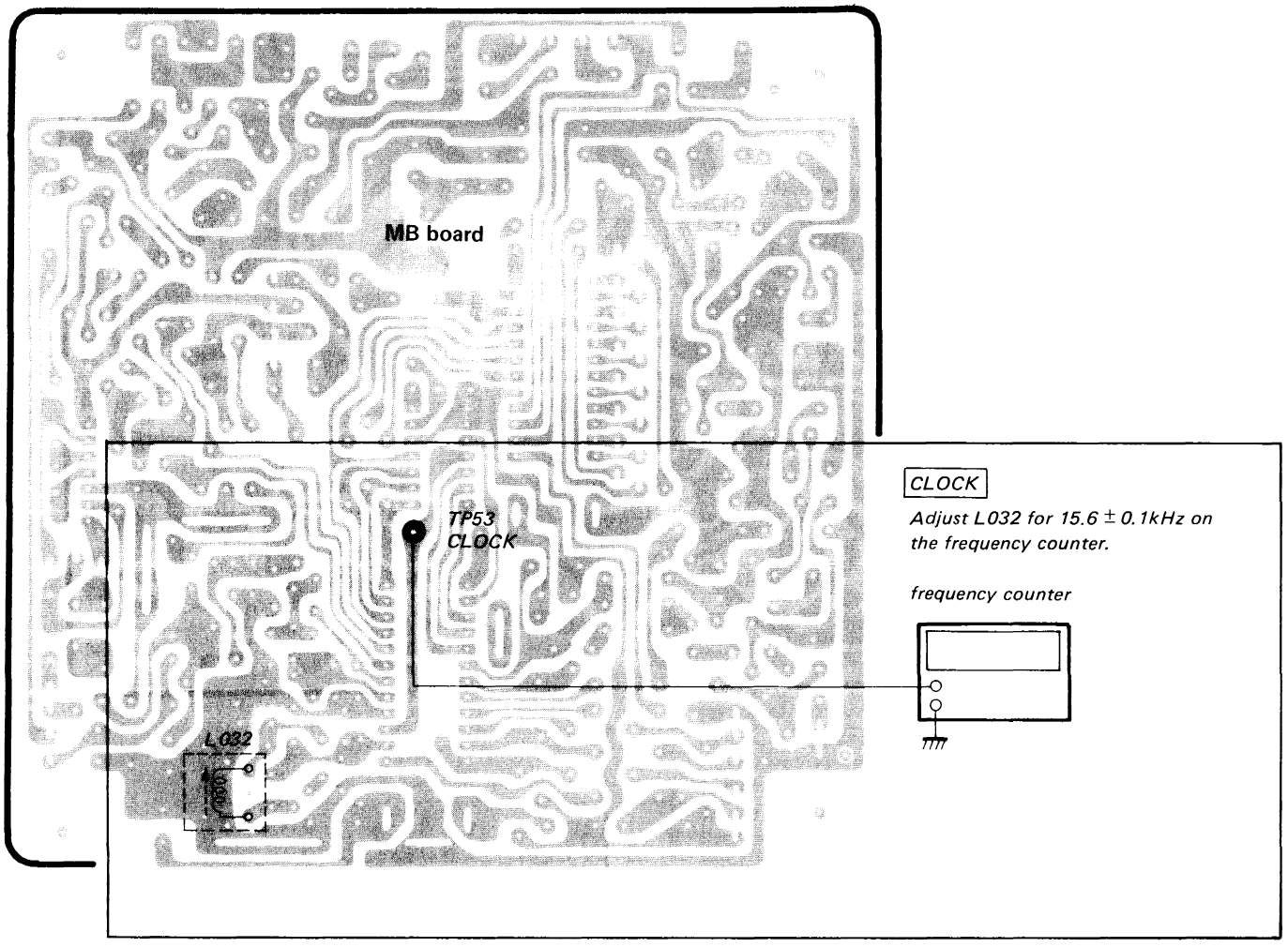
AFT switch . . . . . .ON
AUTO switch . . . . . .ON
TEST/NORMAL switch . . . . .NORMAL
CHANNEL SET switch. . . . . .OFF

(4) These adjustments should be performed with the rated power supply voltage unless otherwise noted.

(5) CIRCUIT ADJUSTMENTS

Adjustment	Circuit Board	Page
CLOCK	MB	37
CROSS BAR POSITION ADJUSTMENT	K	38
VHF and UHF TUNER AGG AFT SUB CONTRAST SUB BRIGHT SIF ACC COLOR SYNC	A	39–41
HV HOLD DOWN BIAS ADJUSTMENT HV REG ADJUSTMENT	G	42–44

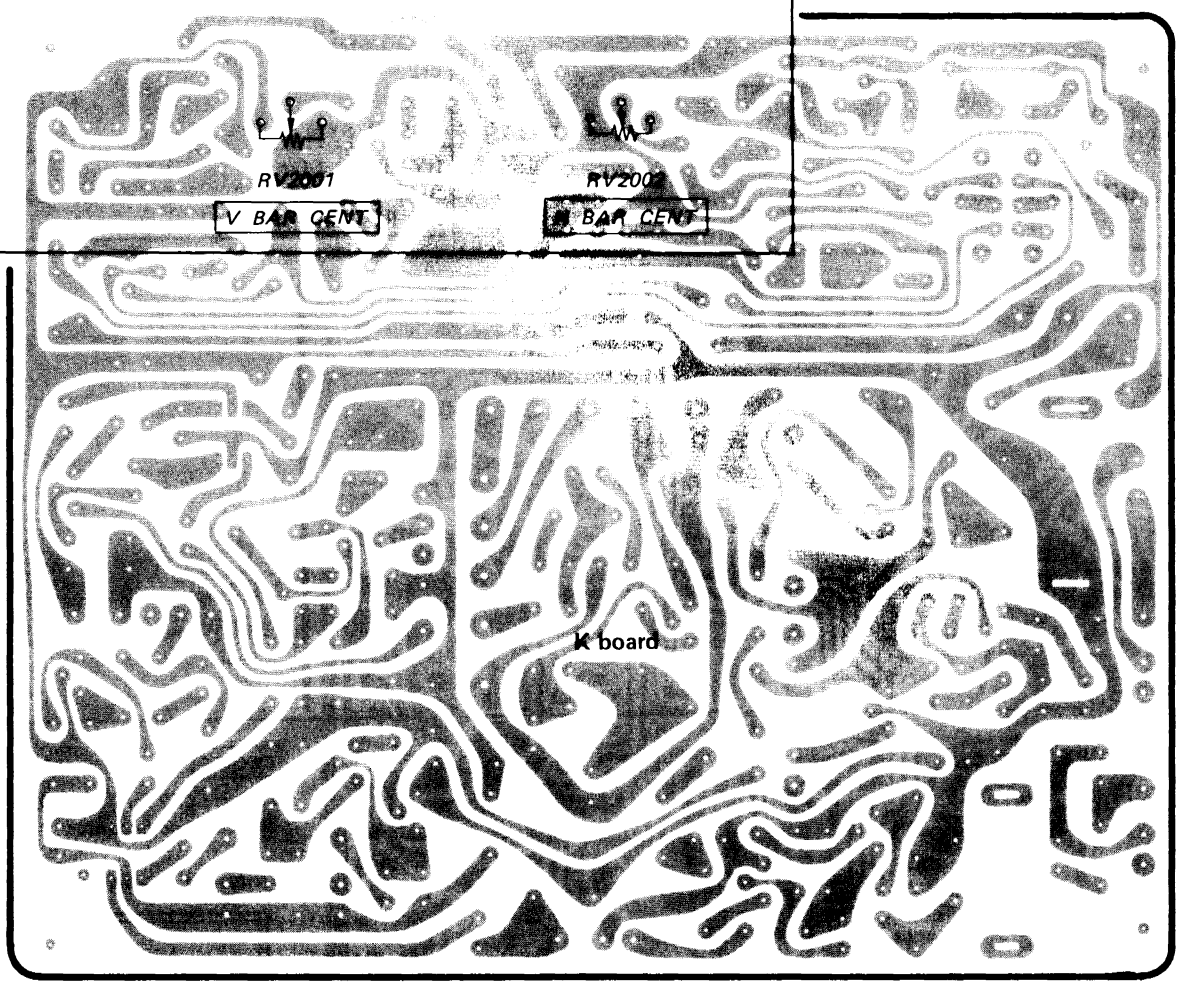
4-1. MB BOARD ADJUSTMENT



4-2. K BOARD ADJUSTMENT

CROSS BAR POSITION ADJUSTMENT

1. *Receive an off-air signal.*
2. *Set the TEST/NORMAL switch to TEST position.*
3. *Set the HATCH/BAR switch to BAR position.*
4. *Adjust RV2001 to center the vertical line.*
5. *Adjust RV2002 to center the horizontal line.*



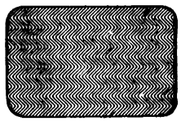
4-3. A BOARD ADJUSTMENTS

VHF and UHF TUNER AGC

1. Tune in an off-air signal.
2. Adjust RV201 and RV202 so that snow-noise and cross-modulation disappear from the picture.

AFT

1. Tune in an off-air signal.
2. Set the AFT switch to OFF.
3. Press the TUNING ▶ button to obtain the 920kHz beat.
4. Press the TUNING ◀ button to obtain the point where the 920kHz beat just disappears.
5. Set the AFT switch to ON. The 920kHz beat will appear or "no color" will occur, if the adjustment is improper.
6. Set T205 to the point where the 920kHz beat just disappears or normal color is obtainable.



SUB CONTRAST

1. Tune in an off-air signal.
2. Set the PICTURE and BRIGHT controls to the suitable picture.
3. Set AUTO switch to OFF and turn the COLOR control to fully counterclockwise to obtain the mono-chrome picture.
4. Adjust RV308 for the suitable contrast picture.
5. Confirm that contrast does no change excessing on other channels.

SUB BRIGHT

1. Tune in an off-air signal.
2. Turn the PICTURE control to fully counterclock-wise, and the BRIGHT control for the suitable picture.
3. Set the AUTO switch to OFF and the COLOR control to fully counterclockwise, so that the mono-chrome picture will appear.
4. Set RV312 for a proper brightness for the picture.
5. Set the PICTURE control for the suitable picture.
6. Confirm that the brightness does not change excessively on other channels.

SIF

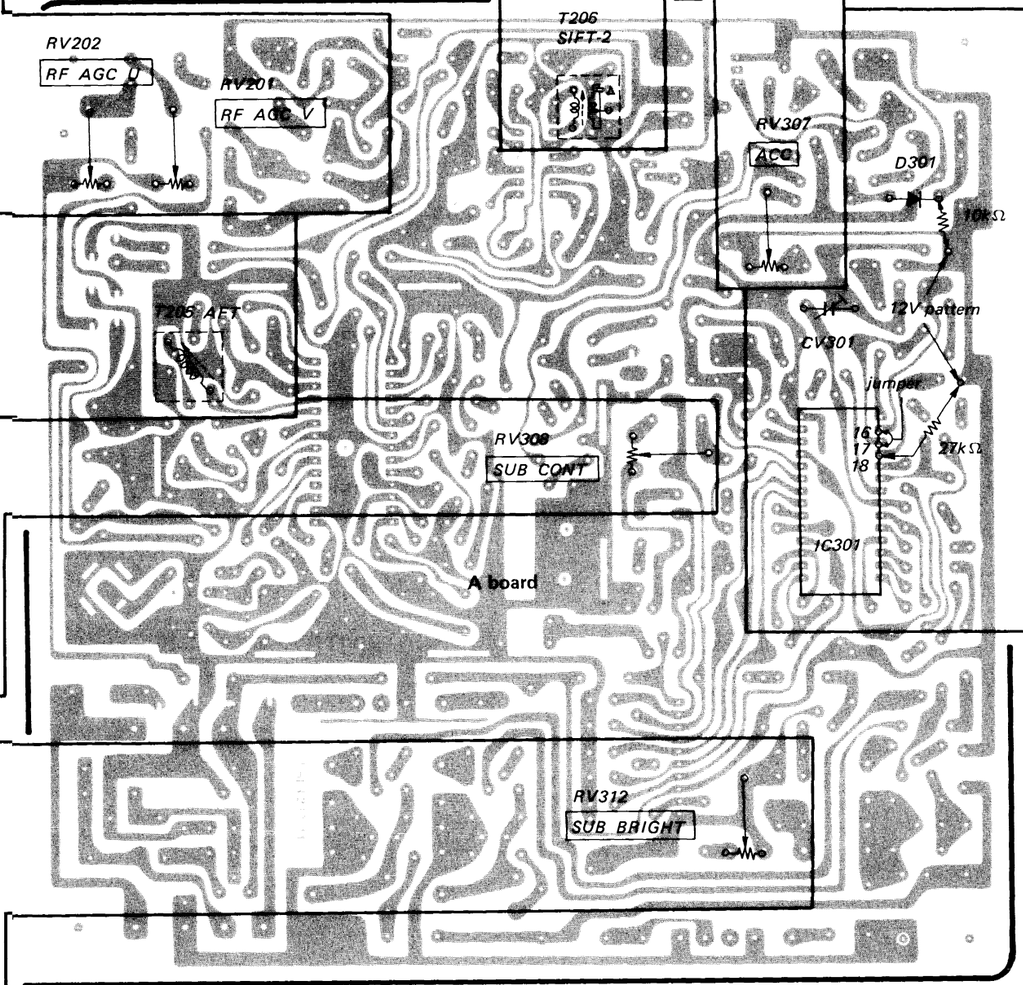
1. Tune in an off-air signal.
2. Adjust T206 for maximum clear-sound.

ACC

1. Tune
2. Set th cente
3. Set th suita
4. Adju
5. Conf exces

COLOR

1. Feed gener
2. Set th A H C P
3. Conn IC30
4. Conn catho
5. Short with
6. Adju
7. Disco the ju



KP-5020/7220 SCC-316A-A/SCC-317A-A

SIF

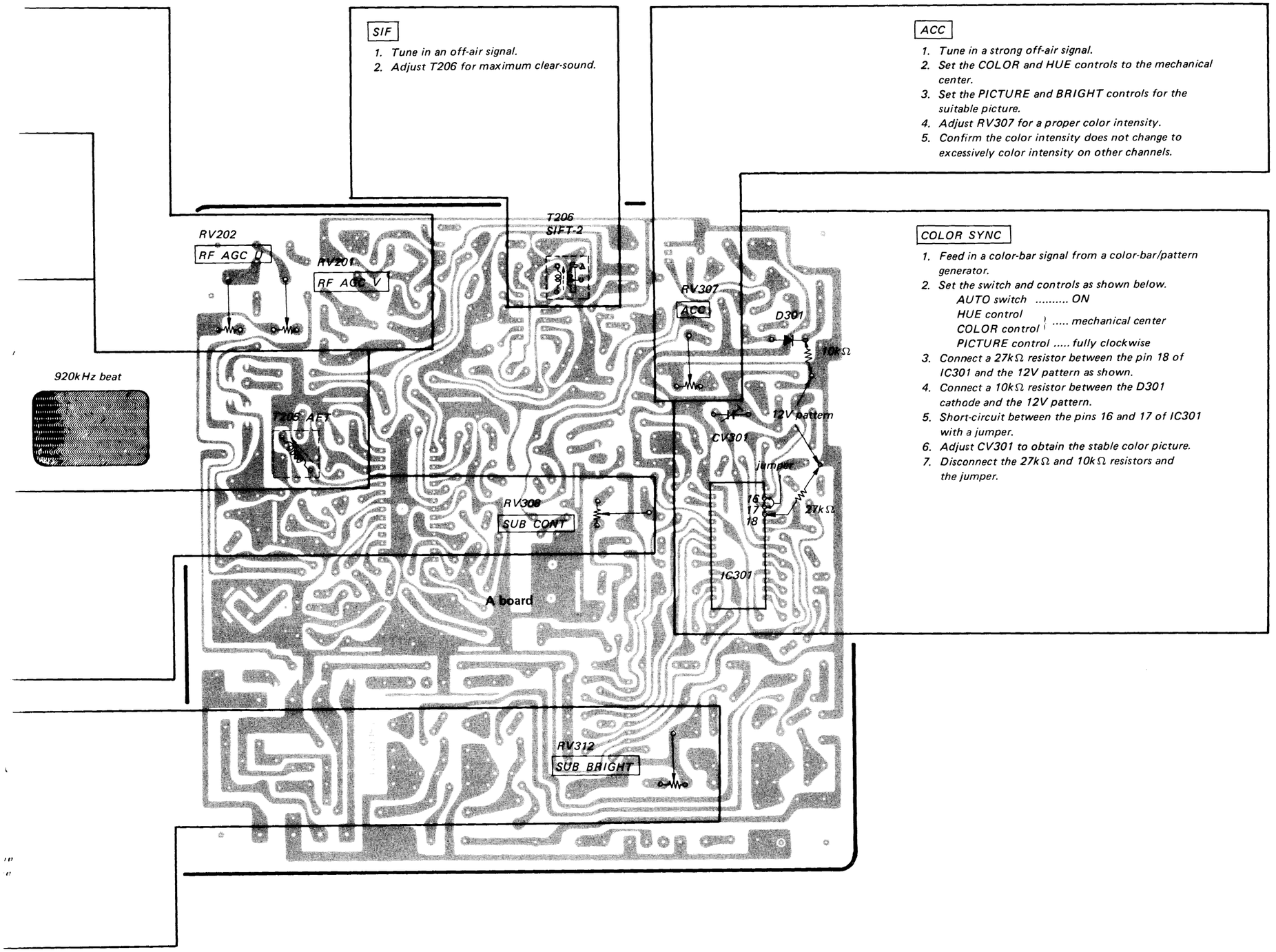
1. *Tune in an off-air signal.*
2. *Adjust T206 for maximum clear-sound.*

ACC

1. *Tune in a strong off-air signal.*
2. *Set the COLOR and HUE controls to the mechanical center.*
3. *Set the PICTURE and BRIGHT controls for the suitable picture.*
4. *Adjust RV307 for a proper color intensity.*
5. *Confirm the color intensity does not change to excessively color intensity on other channels.*

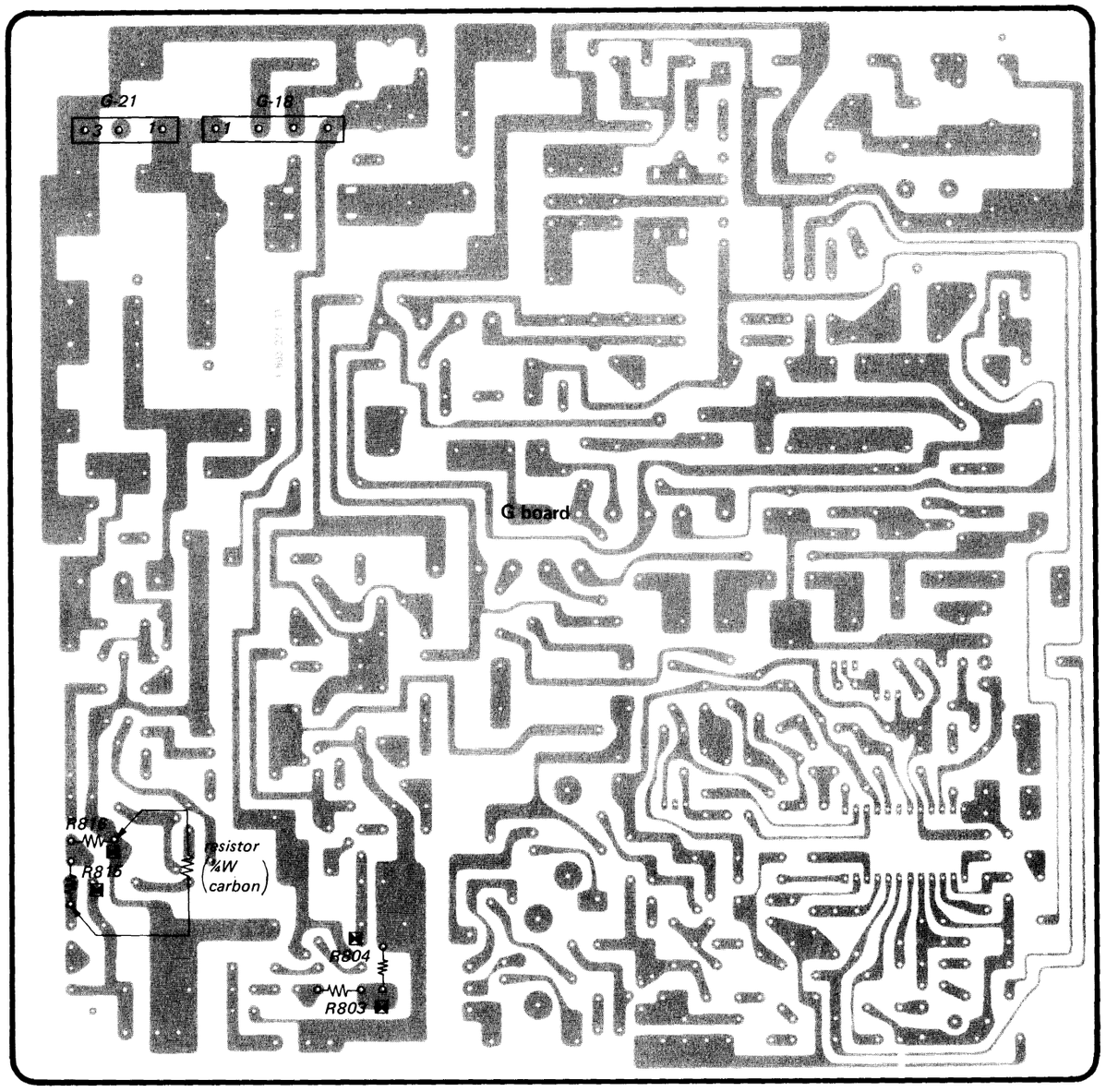
COLOR SYNC

1. *Feed in a color-bar signal from a color-bar/pattern generator.*
2. *Set the switch and controls as shown below.*
   AUTO switch ..... ON
   HUE control
   COLOR control } *..... mechanical center*
   PICTURE control ..... fully clockwise
3. *Connect a 27kΩ resistor between the pin 18 of IC301 and the 12V pattern as shown.*
4. *Connect a 10kΩ resistor between the D301 cathode and the 12V pattern.*
5. *Short-circuit between the pins 16 and 17 of IC301 with a jumper.*
6. *Adjust CV301 to obtain the stable color picture.*
7. *Disconnect the 27kΩ and 10kΩ resistors and the jumper.*



SCC-316A-A/SCC-317A-A KP-5020/7220

4-4. G BOARD ADJUSTMENTS



When replacing the following components, make the HV HOLD DOWN and HV REG adjustments.
G board, DC block
R904 . . . . . .in DC block
IC501, Q801, Q802, Q803, D502, D801, D802, D803, R517, R802, R803, R804, R809, R825, C806, C807, T801 . . in G board
When replacing the following components, make the HV REG adjustment.
R905 . . . . . .in DC block
Q806, Q807, D807, D808, D809, D810, R814, R815, R816, R826 . . . . . in G board

– Electrostatic Voltmeter Method –

HV HOLD DOWN Adjustment (⊠ R803 and R804)

(1) Confirm that the POWER switch is OFF position.
(2) Connect the positive lead of the electrostatic voltmeter to the anode of the picture tube and the negative lead to the ground lug on the chassis as shown in Fig. 4-1.

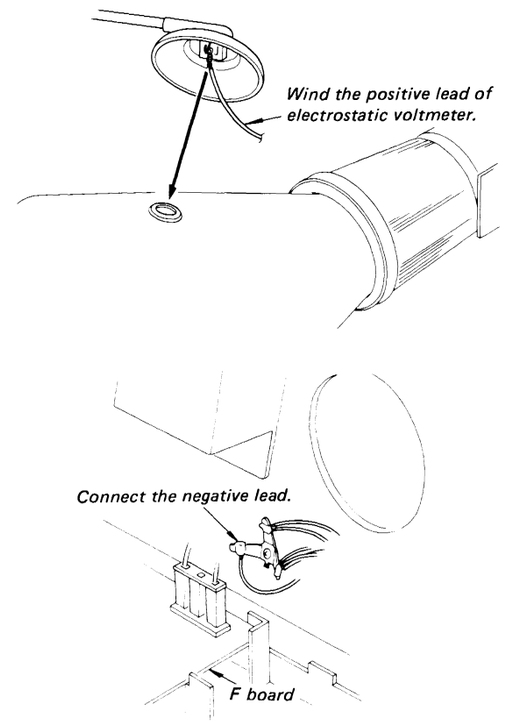


Fig. 4-1

(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls fully counterclockwise. (Be sure to syncronize the picture).
(4) Turn the POWER switch to ON and confirm that the power is automatically turned off just when the voltage on the electrostatic voltmeter is 28.2kV ±300V by connecting a resistor across R815 and R816. (HV HOLD DOWN circuit operates).
(5) If necessary, select R803 and R804 (¼W carbon resistor) and repeat above steps.
(6) Turn the POWER switch to OFF.
(7) Disconnect the resistor.
(8) Perform the HV REG adjustment from step 4.

HV REG Adjustment (⊠ R815 and R816)

(1) Confirm that the POWER switch is OFF position.
(2) Connect the positive lead of the electrostatic voltmeter to the anode of the picture tube and the negative lead to the ground lug on the chassis as shown in Fig. 4-1.
(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls fully counterclockwise. (Be sure to syncronize the picture).
(4) Turn the POWER switch to ON and confirm that the voltage on the electrostatic voltmeter is 26.0kV ±300V.
(5) If necessary, select R815 and R816 (¼W carbon resistor) and repeat above steps.
(6) Turn the POWER switch to OFF and disconnect the positive and negative leads of the electrostatic voltmeter.

When replacing the following components, make the HV HOLD DOWN and HV REG adjustments.
G board, DC block
R904 . . . . . .in DC block
IC501, Q801, Q802, Q803, D502, D801, D802, D803, R517, R802, R803, R804, R809, R825, C806, C807, T801 . . in G board
When replacing the following components, make the HV REG adjustment.
R905 . . . . . .in DC block
Q806, Q807, D807, D808, D809, D810, R814, R815, R816, R826 . . . . . in G board

– Electrostatic Voltmeter Method –

HV HOLD DOWN Adjustment (⊠ R803 and R804)

(1) Confirm that the POWER switch is OFF position.
(2) Connect the positive lead of the electrostatic voltmeter to the anode of the picture tube and the negative lead to the ground lug on the chassis as shown in Fig. 4-1.

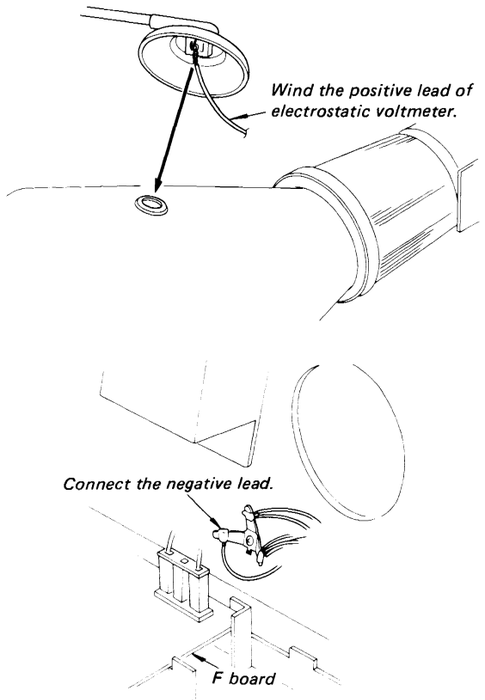


Fig. 4-1

(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls fully counterclockwise. (Be sure to syncronize the picture).
(4) Turn the POWER switch to ON and confirm that the voltage on the electrostatic voltmeter is 28.2kV ±300V by connecting a resistor across R815 and R816.
(HV HOLD DOWN circuit operates).
(5) If necessary, select R803 and R804 (¼W carbon resistor) and repeat above steps.
(6) Turn the POWER switch to OFF.
(7) Disconnect the resistor.
(8) Perform the HV REG adjustment from step 4.

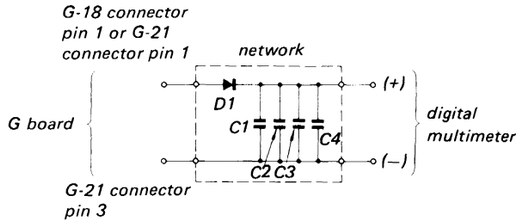
HV REG Adjustment (⊠ R815 and R816)

(1) Confirm that the POWER switch is OFF position.
(2) Connect the positive lead of the electrostatic voltmeter to the anode of the picture tube and the negative lead to the ground lug on the chassis as shown in Fig. 4-1.
(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls fully counterclockwise. (Be sure to syncronize the picture).
(4) Turn the POWER switch to ON and confirm that the voltage on the electrostatic voltmeter is 26.0kV ±300V.
(5) If necessary, select R815 and R816 (¼W carbon resistor) and repeat above steps.
(6) Turn the POWER switch to OFF and disconnect the positive and negative leads of the electrostatic voltmeter.

– Digital Multimeter Method –

HV HOLD DOWN Adjustment (⊠ R803 and R804)

(1) Confirm that the POWER switch is OFF position.
(2) Make the following network and connect a digital multimeter as shown in Fig. 4-2.



Diode (D1): V-11N (8-719-901-19)
Capacitors (C1–C4): 16,000pF/1.5kV polyethylene (1-129-924-00)
Digital multimeter: Capable of measuring the voltages is more than 1,100V.

Fig. 4-2

(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls fully counterclockwise. (Be sure to syncronize the picture).
(4) Turn the POWER switch to ON and confirm that the power is automatically turned off just when the voltage on the digital multimeter is 995V ±6V dc by connecting a resistor across R815 and R816.
(HV HOLD DOWN circuit operates).
(5) If necessary, select R803 and R804 (¼W carbon resistor) and repeat above steps.
(6) Turn the POWER switch to OFF.
(7) Disconnect the resistor.
(8) Perform the HV REG adjustment from step 4.

HV REG Adjustment (⊠ R815 and R816)

(1) Confirm that the POWER switch is OFF position.
(2) Make the following network and connect a digital multimeter as shown in Fig. 4-2.
(3) Feed in a white pattern from a color-bar/pattern generator and turn the BRIGHT and PICTURE controls fully counterclockwise. (Be sure to syncronize the picture).
(4) Turn the POWER switch to ON and confirm that the voltage on the digital multimeter is 930V ±6V dc.
(5) If necessary, select R815 and R816 (¼W carbon resistor) and repeat above steps.
(6) Turn the POWER switch to OFF and disconnect the network and the digital multimeter.

SECTION 5 DIAGRAMS

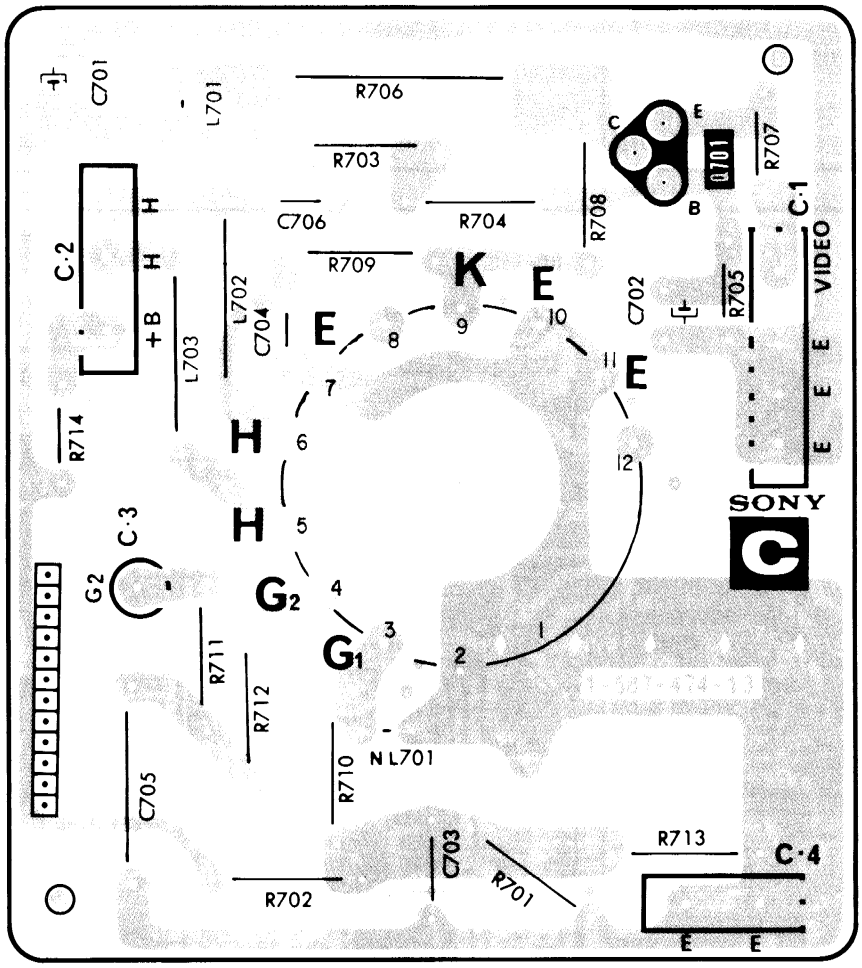
5-1. MOUNTING DIAGRAM
Conductor Side –

[R. G. B. OUT] C

A B C D

1
2
3
4
5

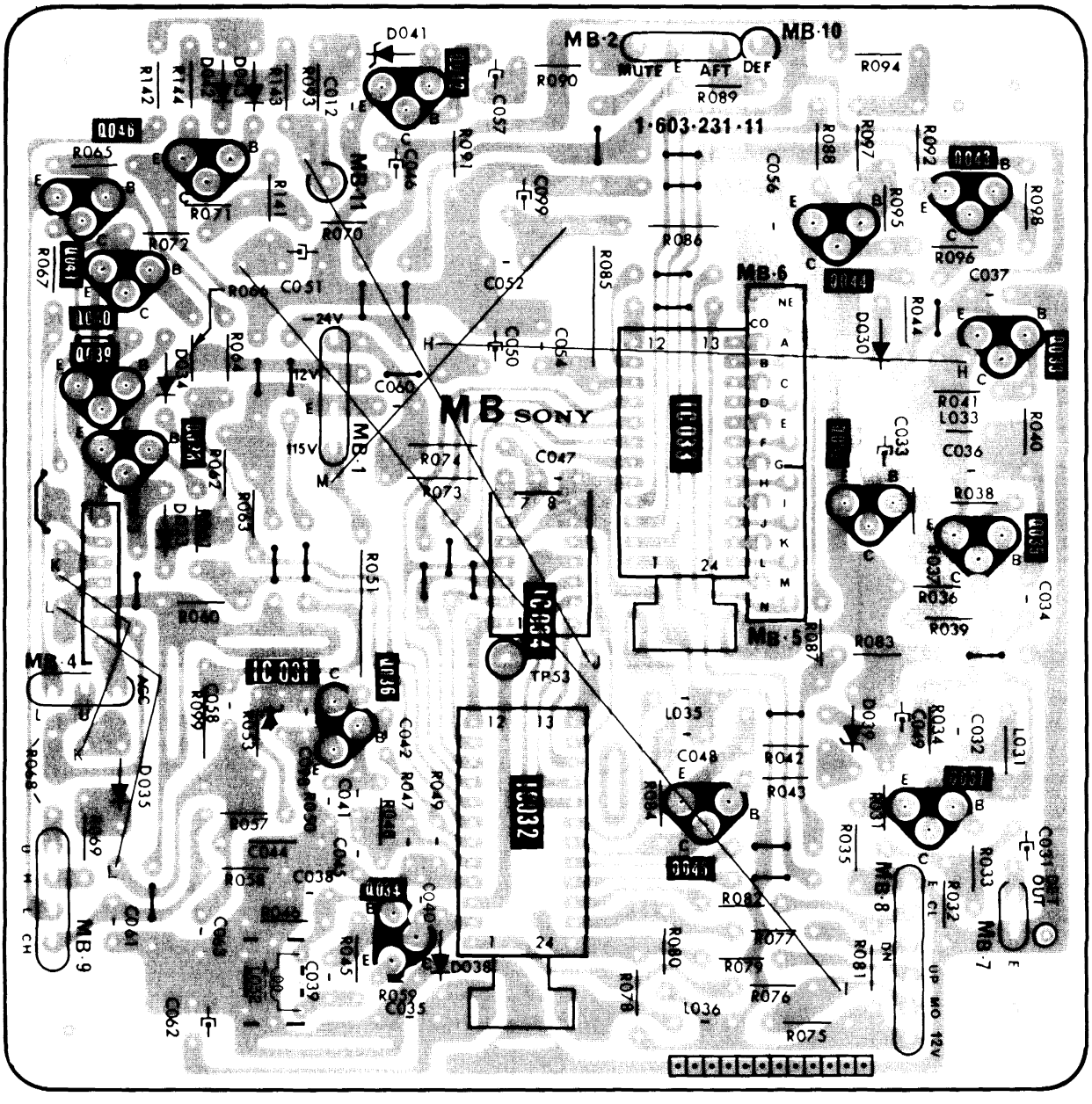
– C Board –



MB [AUTO TUNING, BAND SW NEON DRIVE, AFT]

— MB Board —

Q・IC	041 040 039 038 046 IC031 036 042 034 IC034 IC032 IC033 045 044 032 031 043 033 035	Q・IC
D	034 033 035 042,043 041 038 030 039	D
ADJ	L032	ADJ

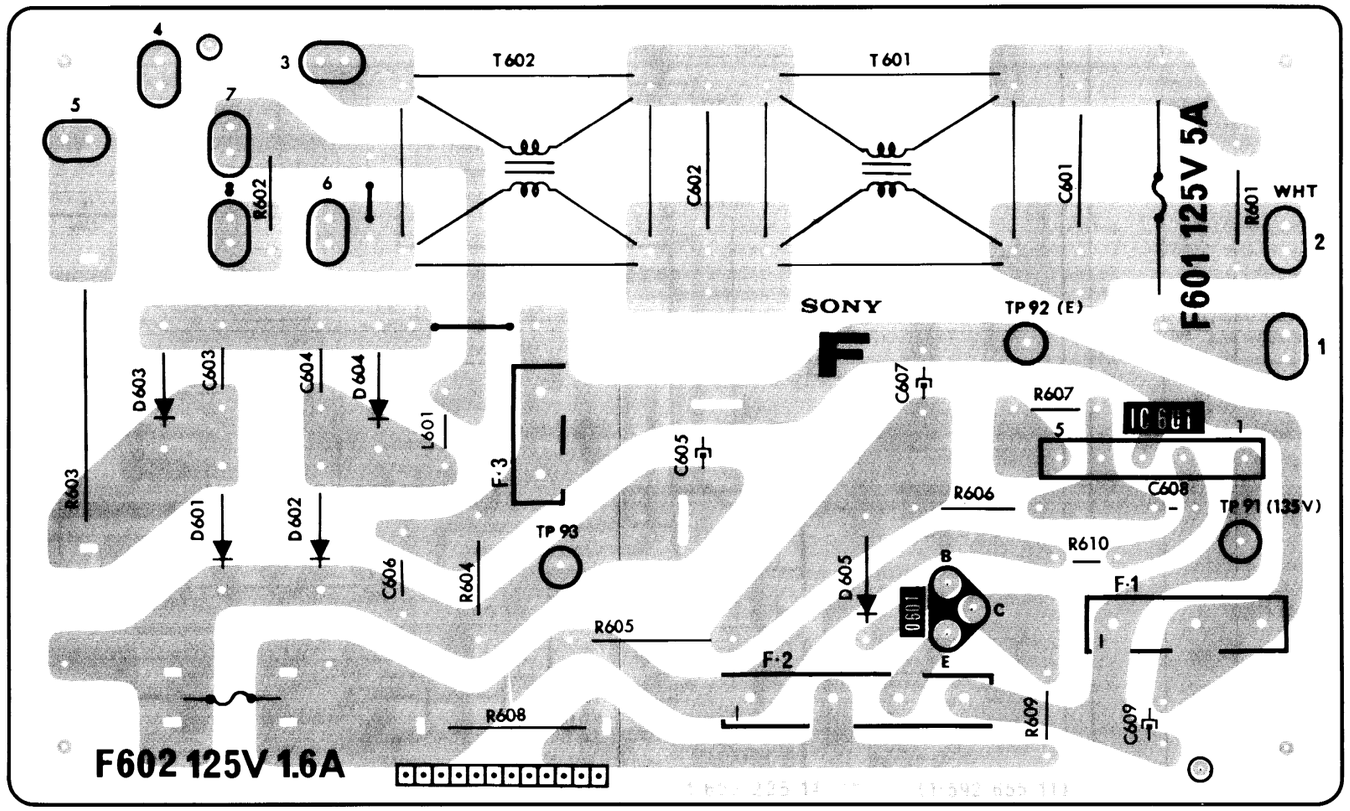


[POWER RECT 135V REG] F F

A B C D E F G

1 2 3 4 5

– F Board –



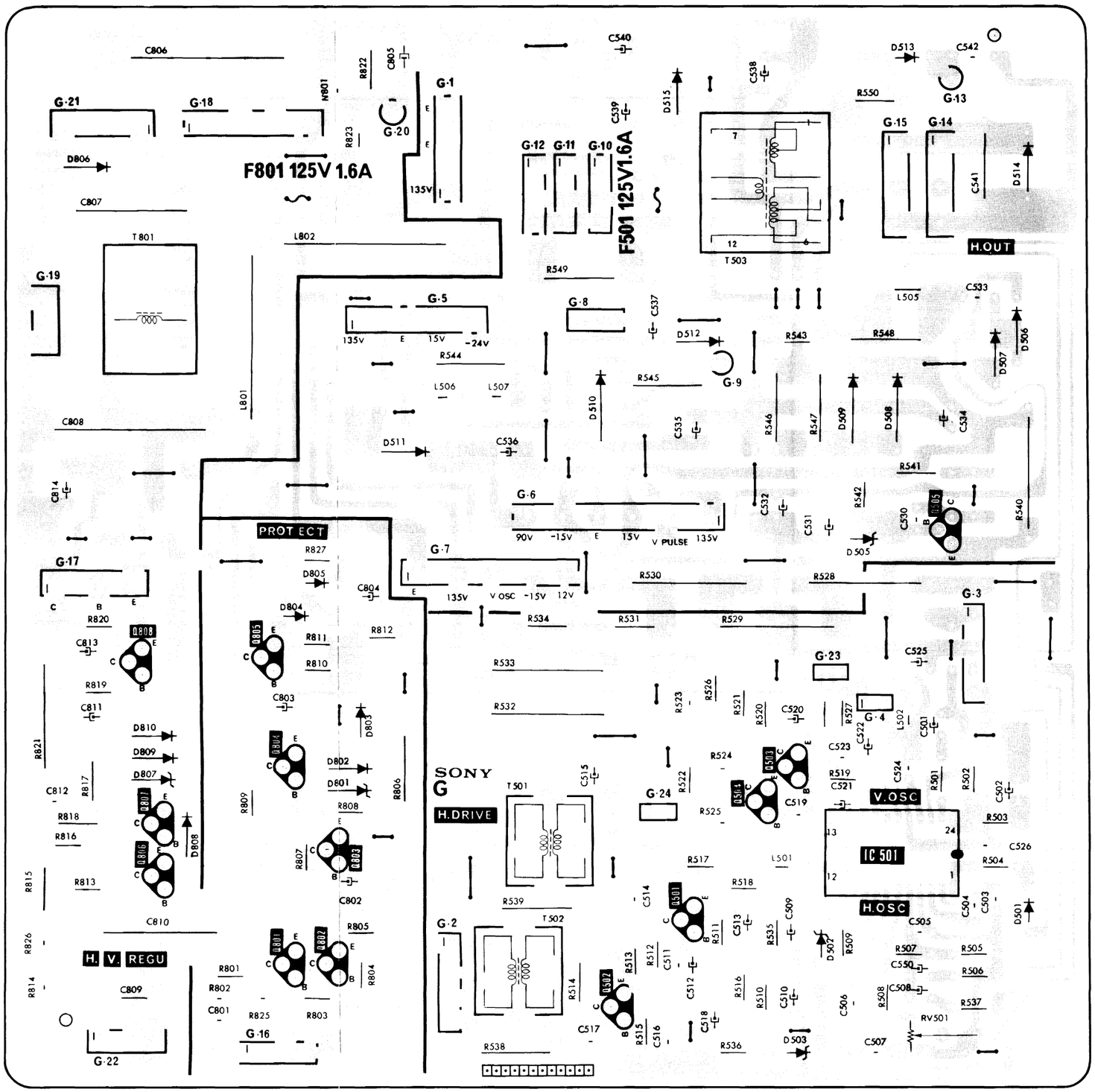
G **G** H/V OSC, DRIVE OUT
HV PROTECT, HV REG
1K PROTECT, 12V REG

A B C D E F G

1 2 3 4 5

— G Board —

Q, IC	D	ADJ
	513	
	515	
	806 514	
	506	
	512 507	
	510	
	509,508	
	511	
505	505	
	805	
	804	
805 808		
	803	
	810	
	809	
804 503	802	
	807	
504	801	
807		
	808	
803 IC501		
806		
	501	
501		
	502	
801,802		
502		
		RV501
	503	
Q, IC	D	ADJ



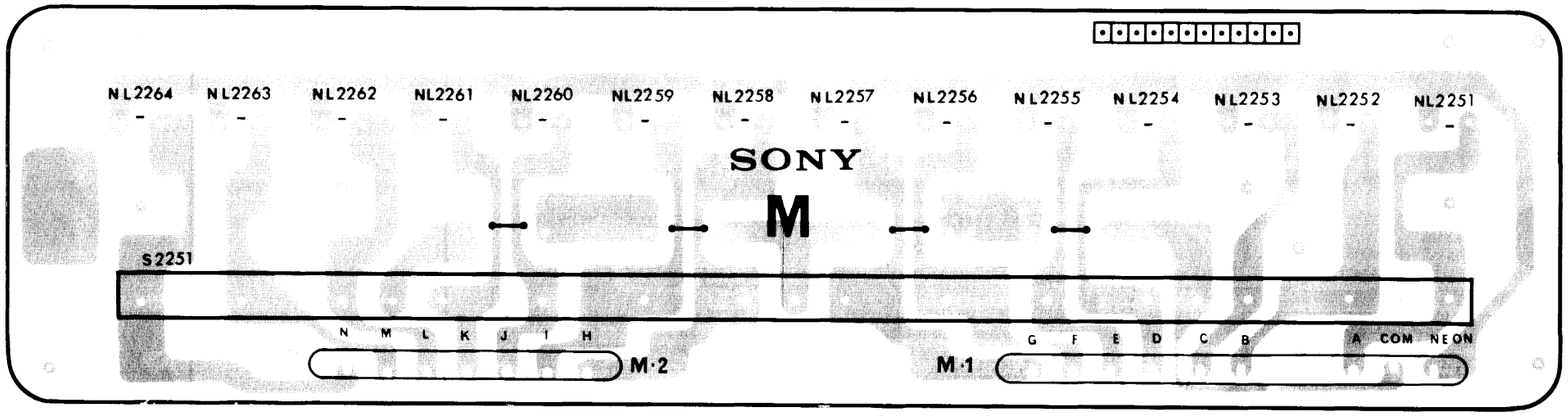
MJ [CHANNEL SELECT / CHANNEL INDICATE] M M MJ

A B C D E F G

1

2

– M Board –

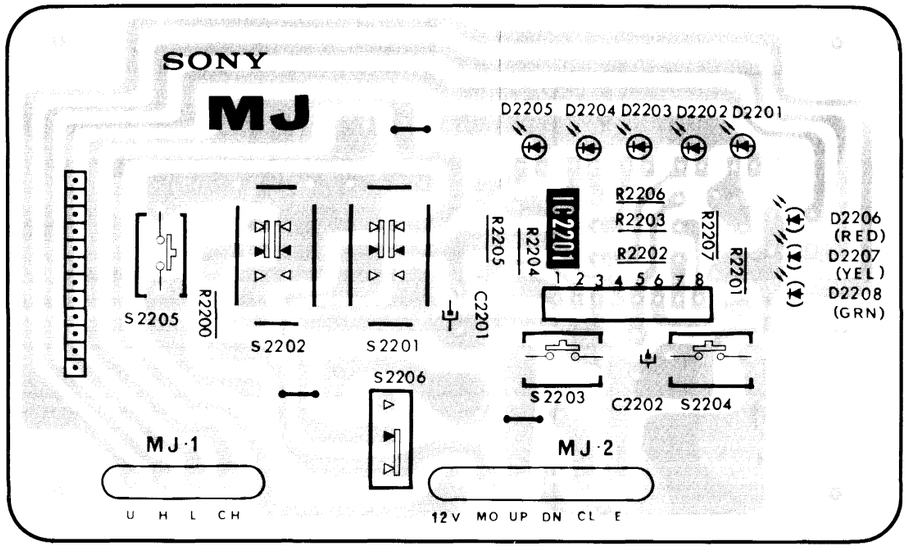


3

4

5

– MJ Board –

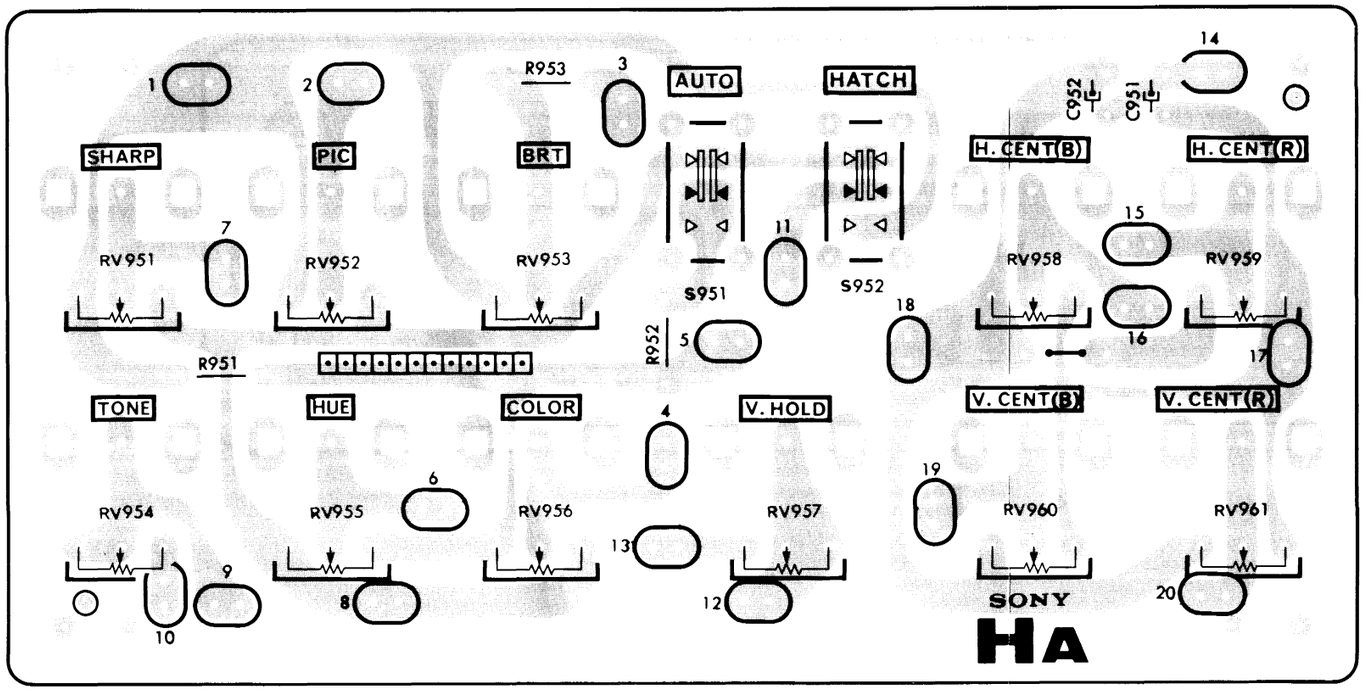


[SCRN] HB [CUSTOMER CONTROL] HA HA S [TUNER, ACTIVE FILTER]

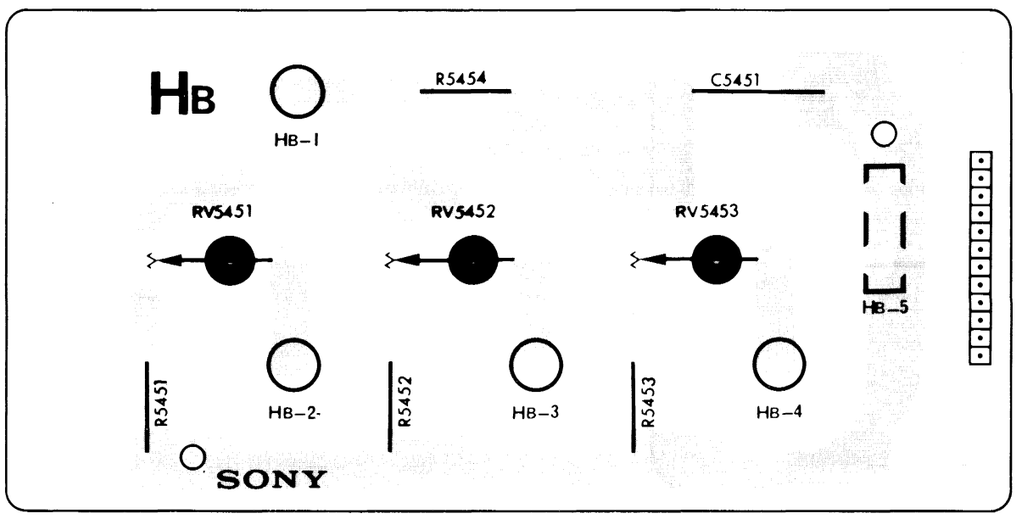
A B C D E F G

1 2 3 4 5

– HA Board –

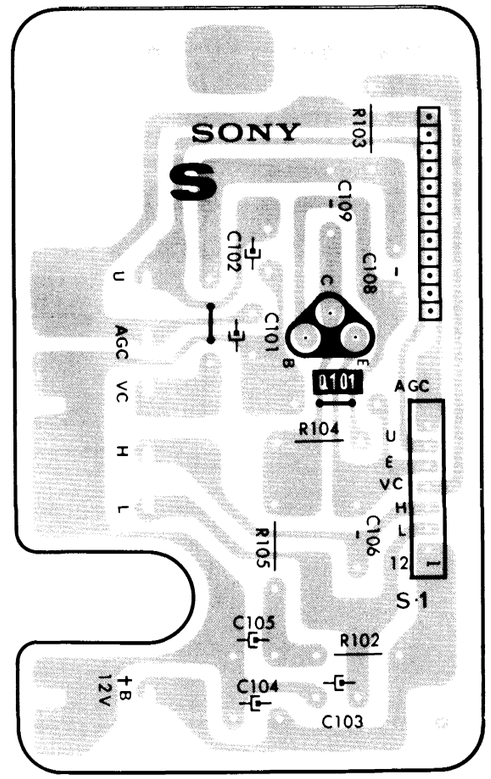


– HB Board –



1-587-481-11

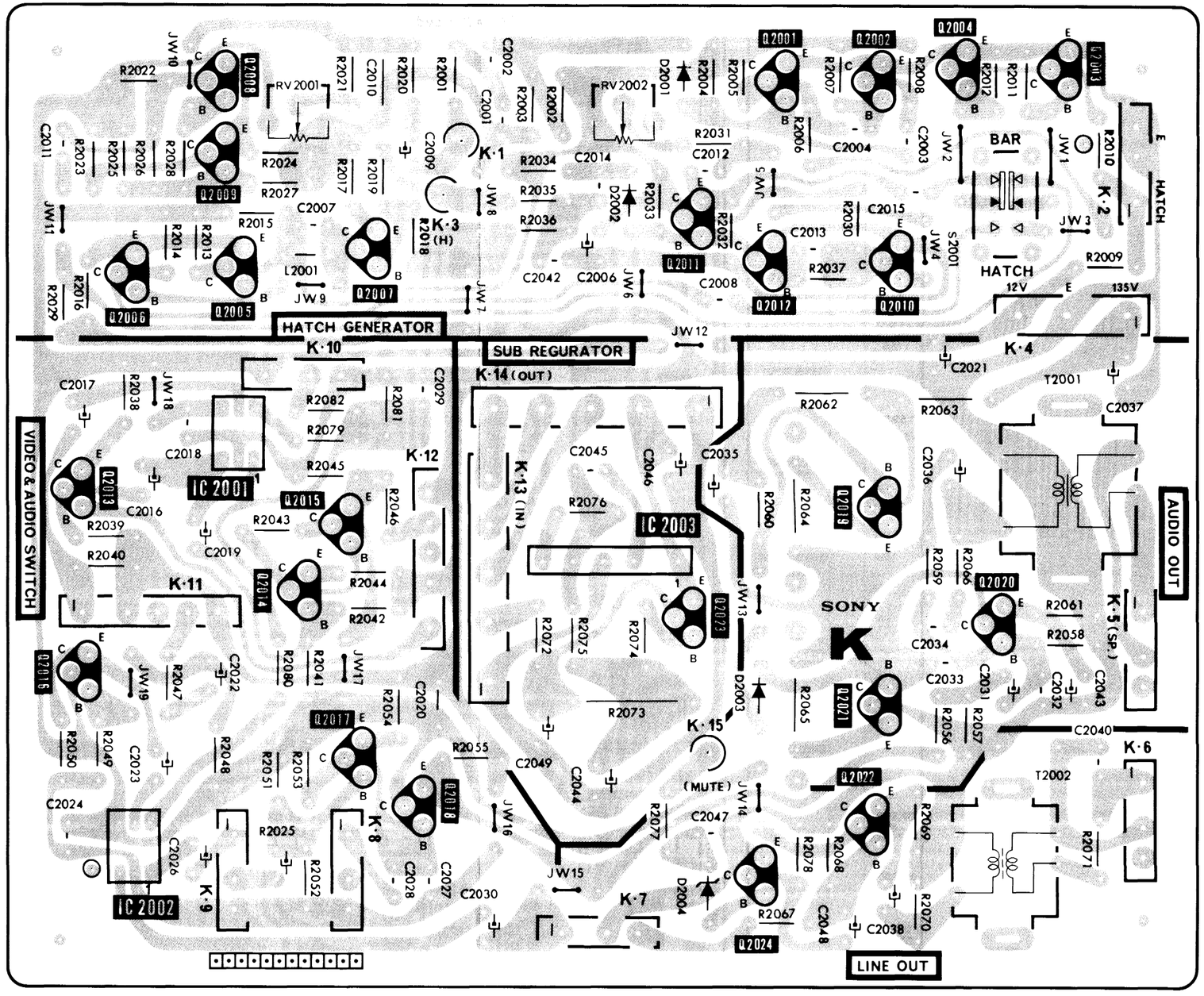
– S Board –



[V HATCH, V BAR, H HATCH, H BAR, LINE OUT, AUDIO OUT, SUB REG OUT] **K** **K**

— K Board —

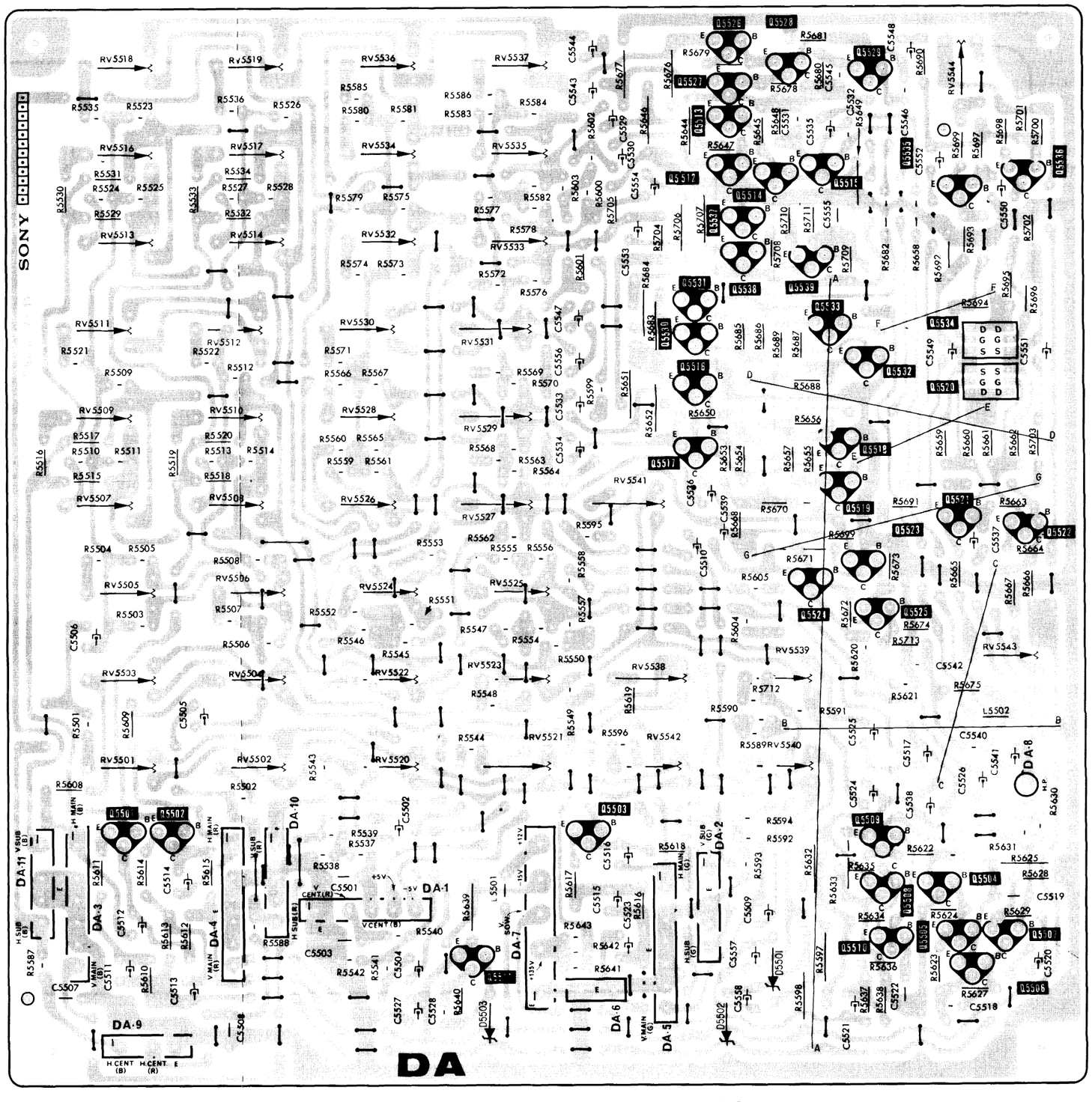
IC , Q	D	ADJ
2001,2002 2008 2004,2003	2001	RV2001 RV2002
2009	2002	
2011 2007 2012,2010 2006,2005		
2019 IC2003 2023,2020	2003	
2021		
2022 2024	2004	



DA DA [H, V REGISTRATION]

– DA Board –

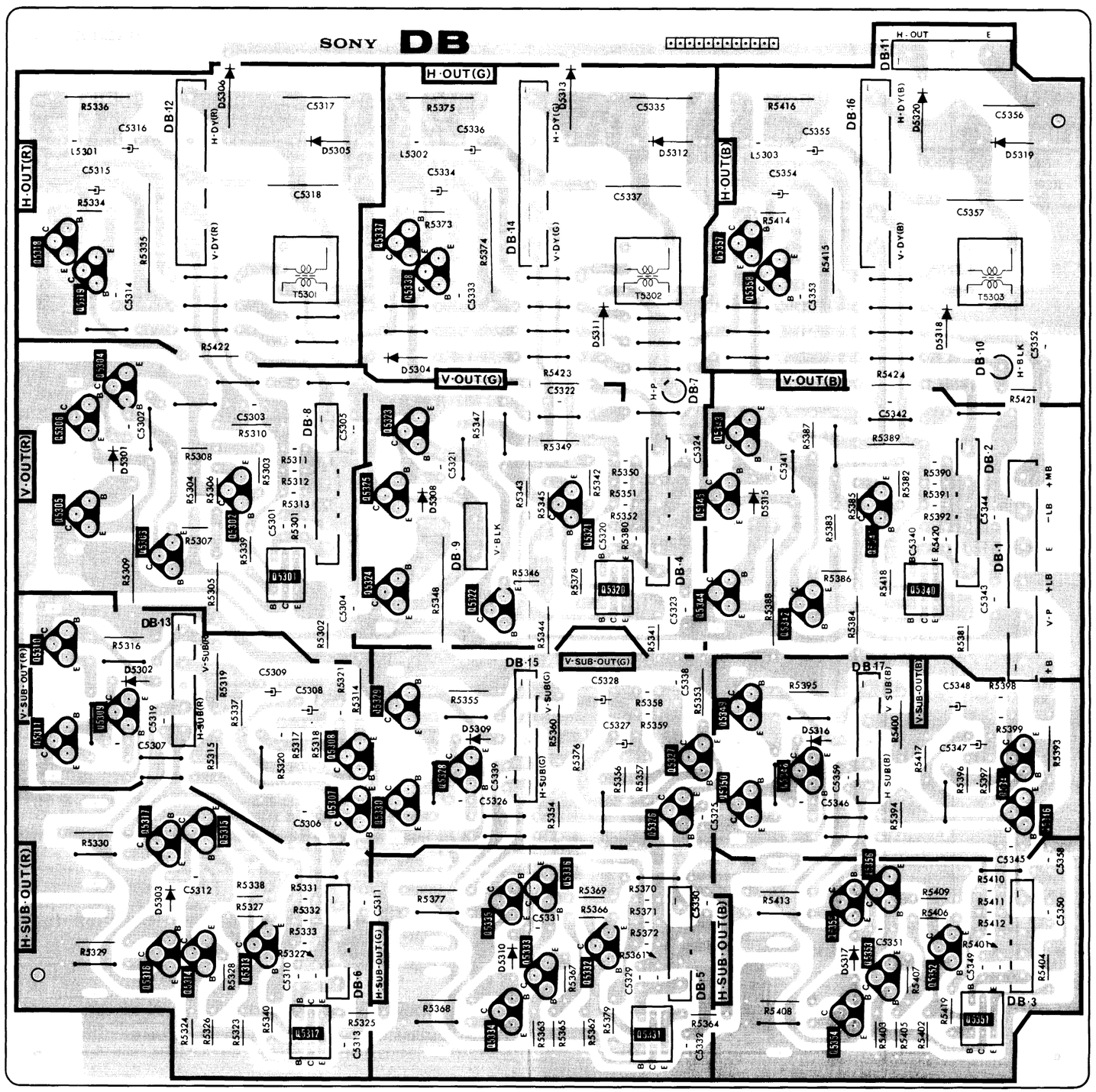
Q	D	ADJ
5526		RV5544
5528 5529		RV5518,RV5519 RV5536,RV5537
5527		
5513		
		RV5516,RV5517
5512,5515 5514,5536 5535		RV5534,RV5535
5537		
		RV5513,RV5514
5538,5539		RV5532,RV5533
5531		
		RV5511,RV5512
5533 5530 5534		RV5530,RV5531
5532		
5516 5520		
		RV5509,RV5510
		RV5528,RV5529
5517,5518		
5519		RV5507,RV5508 RV5527,RV5527
5521 5522		RV5541
5523		
5524		RV5505,RV5506
5525		RV5524,RV5525
		RV5543
		RV5503,RV5504 RV5522,RV5523 RV5538,RV5539
		RV5501,RV5502 RV5520,RV5521 RV5542,RV5540
5501,5502 5503 5509		
5508,5504		
5505,5507 5510 5511 5506	5501	
	5503 5502	



[V DEF, V SUB DEF
H SUB DEF, H PIN] **DB** **DB**

— DB Board —

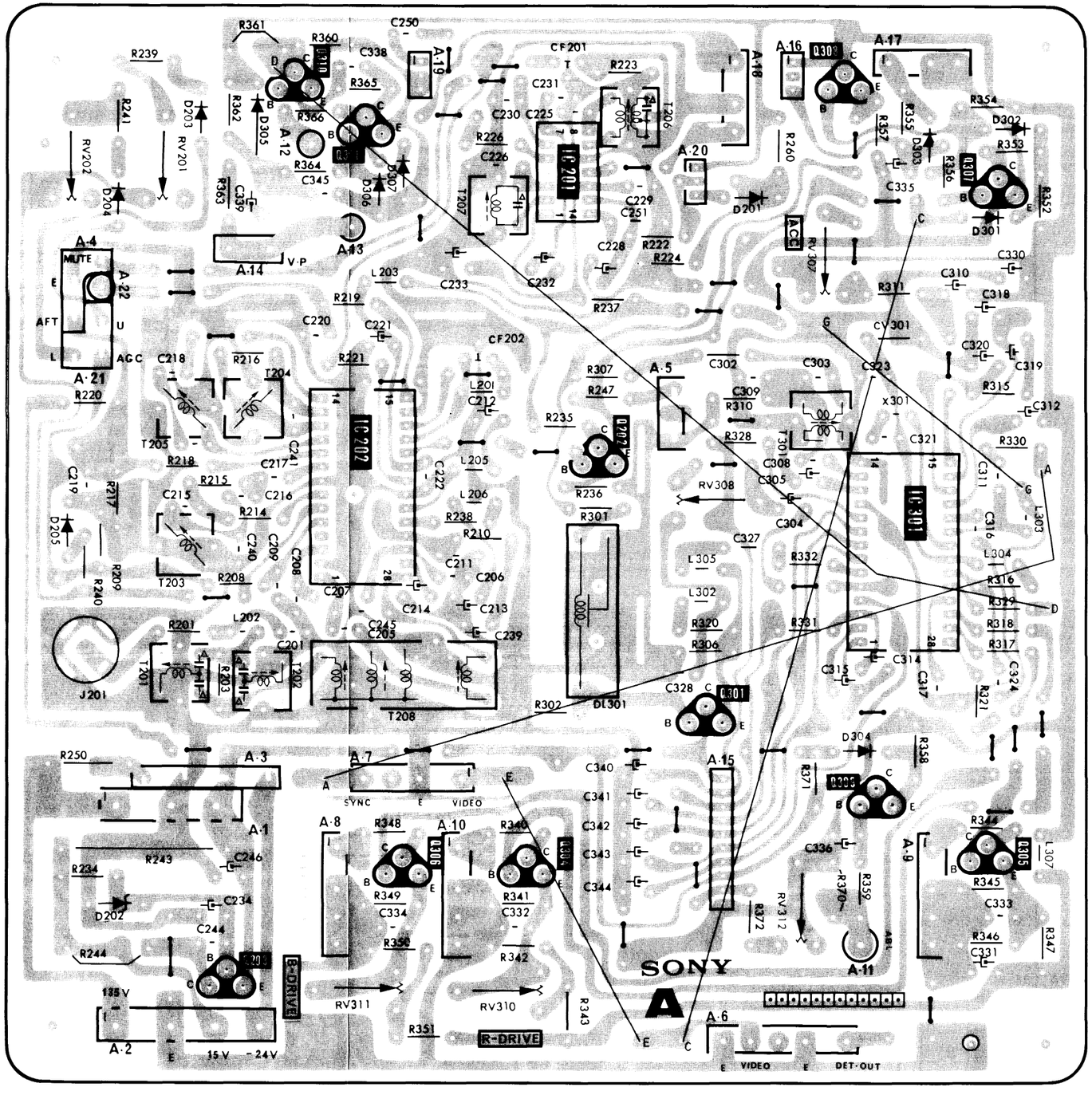
Q	D
	5306,5313
	5320
	5305 5319 5312
5318 5337 5357	
5319,5338,5358	
	5311,5318
	5304
5304	
5306 5323,5343	
	5301
5302 5325,5345 5321,5341 5305	5308,5315
5303	
5301	
5324,5320,5340 5344 5322,5342	
5310	
	5302
5329,5349 5309	
5311	5309,5316
5308,5327,5347 5328,5348	
5330,5350 5307,5326 5315 5346 5317	
5336,5356 5335 5355	5303
5313,5332,5352 5316,5314	5310,5317
5333 5353	
5334,5354 5351 5312 5331	



A A VIF, SIF, Y, CHROMA, R-G-B DRIVE VIDEO SW, BUK

— A Board —

Q, IC	D	ADJ
310 308		
311	203 303 305,302	
IC201 307	307 306 204,201 301	RV202 RV201
		RV307
202 IC202		RV308
IC301	205	
301	304	
309		
305 306,304	202	RV312
203		RV311, RV310
Q, IC	D	ADJ



5-2. SCHEMATIC DIAGRAM (1/2)

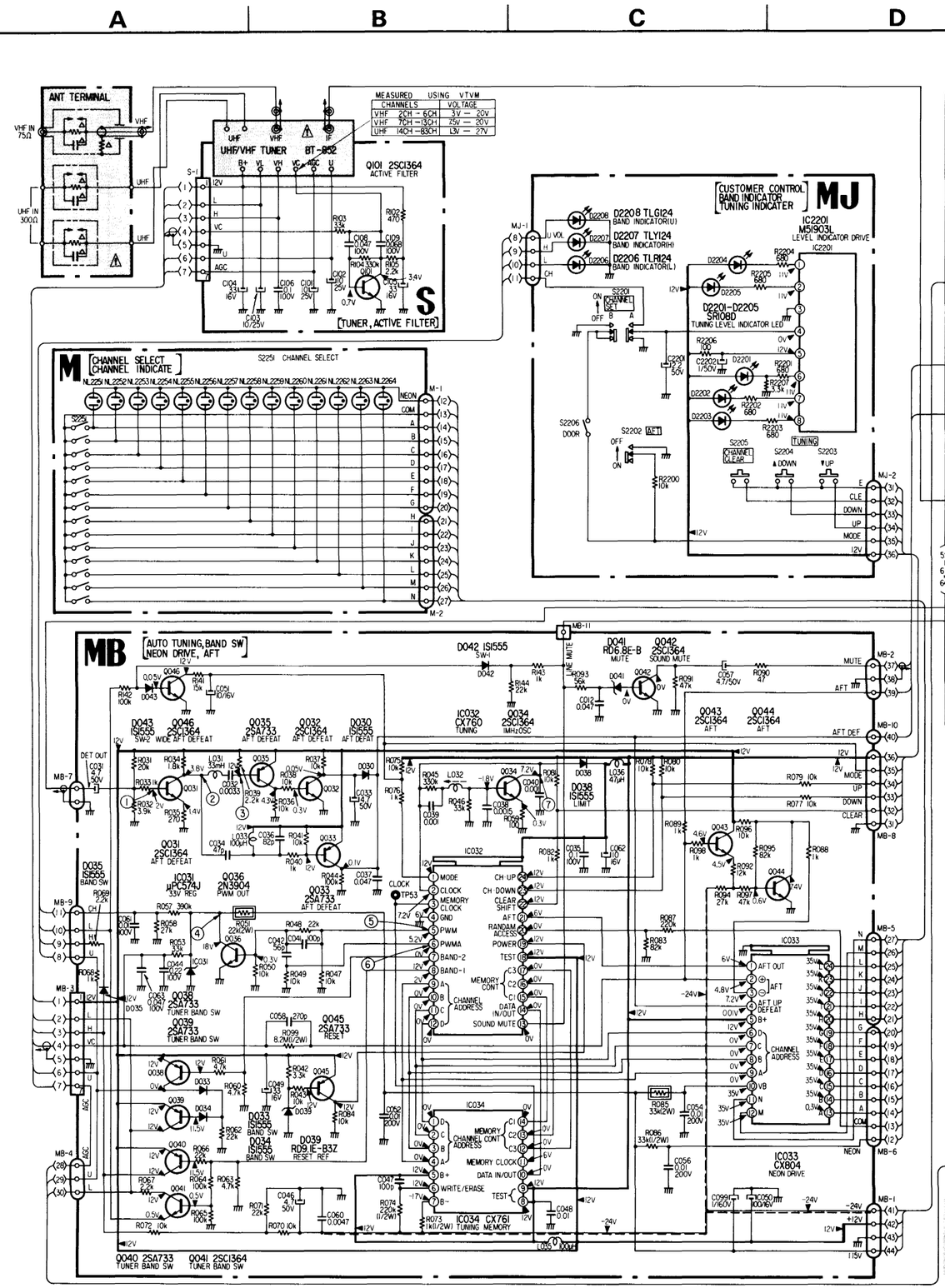
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

- All capacitors are in μF unless otherwise noted. p : μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. k : 1000Ω, M : 1000kΩ
- ▭ : nonflammable resistor.
- △ : internal component.
- ▭ : panel designation.
- The components identified by ⊠ in this manaul have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊠ and repeat the adjustment until the specified value is achieved.
  (Refer to HV HOLD DOWN and HV REG Adjustments on page 42 – 44).
- When replacing the part in below table, be suer to perform the related adjustment.

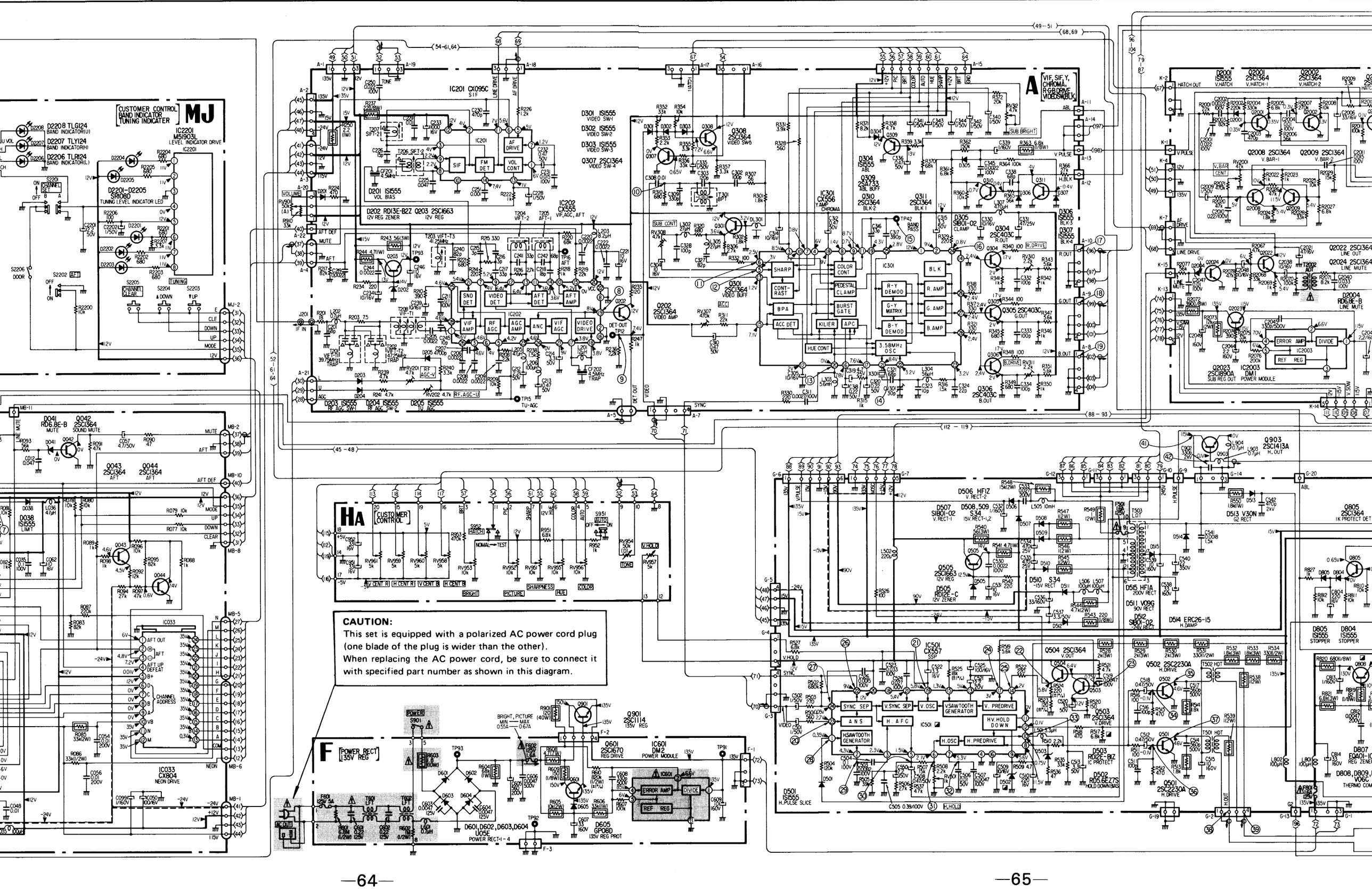
Part replaced (◪)	Adjustment
G board, DC block R904, IC501, Q801, Q802, Q803, D502, D801, D802, D803, R517, R802, R803, R804, R809, R825, C806, C807, T801	HV HOLD DOWN ADJUSTMENT (R803/804) HV REG ADJUSTMENT (R815/816)
R905, Q806, Q807, D807, D808, D809, D810, R814, R815, R816, R826, Q808, Q904	HV REG ADJUSTMENT (R815/816)

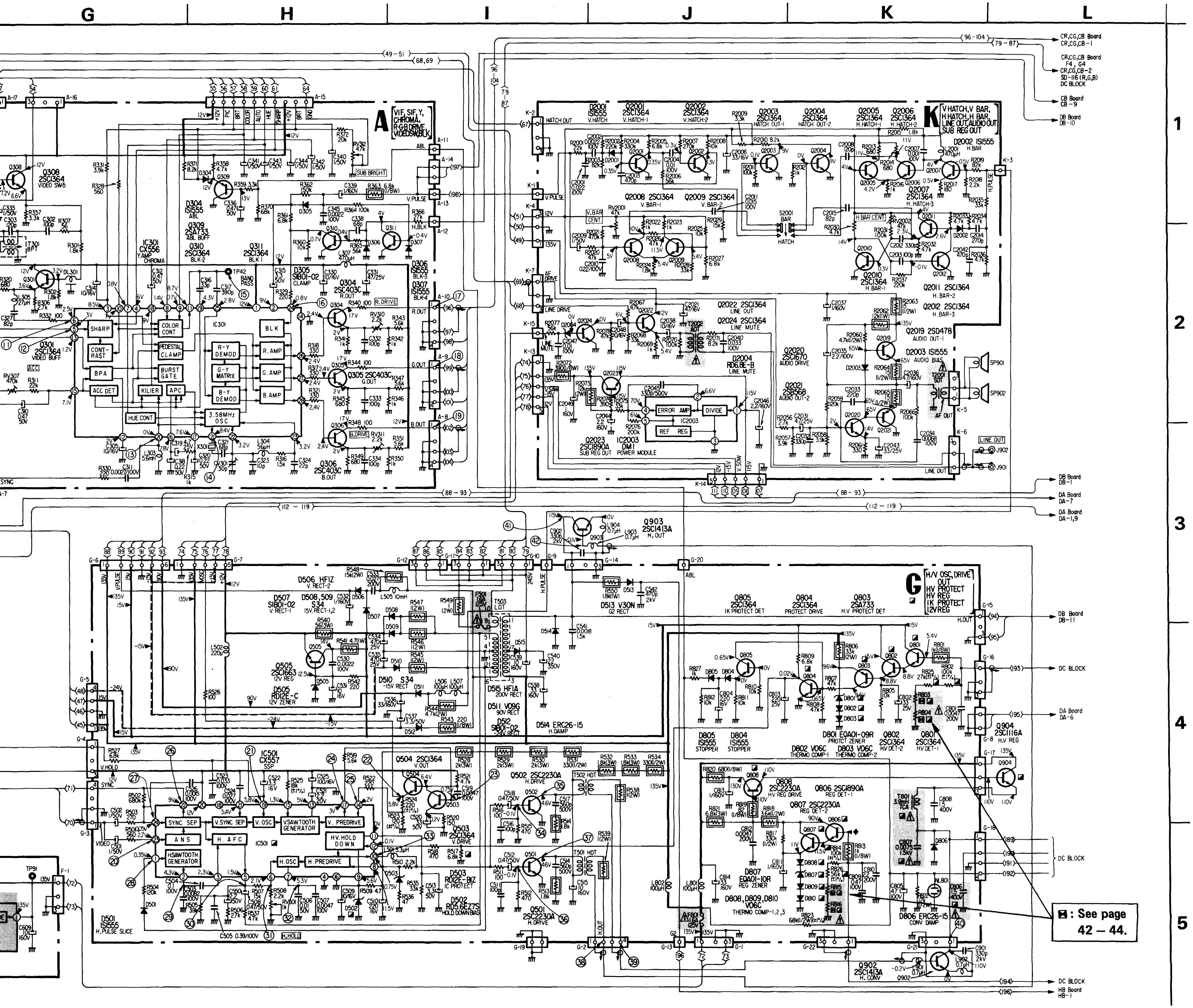
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Reference numbers of the Q board differ from those indicated on the printed circuit board of the set.
- Read the reference numbers of the Q board by adding 1000 to those indicated.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 20,000-ohm-per-volt VOM.
- ● : adjustable without removing cabinet.
- ▭ : adjustment for repair.
- Readings are taken with a color-bar video signal input.
- Voltage variations may be noted due to normal production tolerances.
- ——— : B+ bus.
- ◆ : When this portion is touched with the probe of a VOM, the set will be turned off. (Q806 base on G board)



SCC-316A-A/SCC-317A-A KP-5020/7220

C D E F G H I J





A VIF, SIF, Y, CHROMA, R·G·B DRIVE, VIDEO SW, BLK
K V HATCH, V BAR, H HATCH, H BAR, LINE OUT, AUDIO OUT, SUB REG OUT
G H/V OSC, DRIVE, OUT, HV PROTECT, HV REG, IK PROTECT, 12V REG
IC301 CX556 Y AMP CHROMA
IC501 CX557 SSP
IC2003 DM1 POWER MODULE
SHARP
CONT-RAST
BPA
ACC DET
COLOR CONT
PEDESTAL CLAMP
BURST GATE
KILLER
APC
HUE CONT
R-Y DEMOD
G-Y MATRIX
B-Y DEMOD
3.58MHz OSC
BLK
R. AMP
G. AMP
B AMP
ERROR AMP
DIVIDE
REF REG
SYNC SEP
V. SYNC SEP
V. OSC
V.SAWTOOTH GENERATOR
V. PREDRIVE
A N S
H. A F C
HV. HOLD DOWN
H.SAWTOOTH GENERATOR
H. OSC
H. PREDRIVE
CR,CG,CB Board CR,CG,CB-1
CR,CG,CB Board F4, G4
CR,CG,CB-2
SD-116 (R,G,B) DC BLOCK
CB Board CB-9
DB Board DB-10
DB Board DB-1
DA Board DA-7
DA Board DA-1,9
DB Board DB-11
DC BLOCK
DA Board DA-6
HB Board HB-1
: See page 42 — 44.

5-2. SCHEMATIC DIAGRAM (2/2)

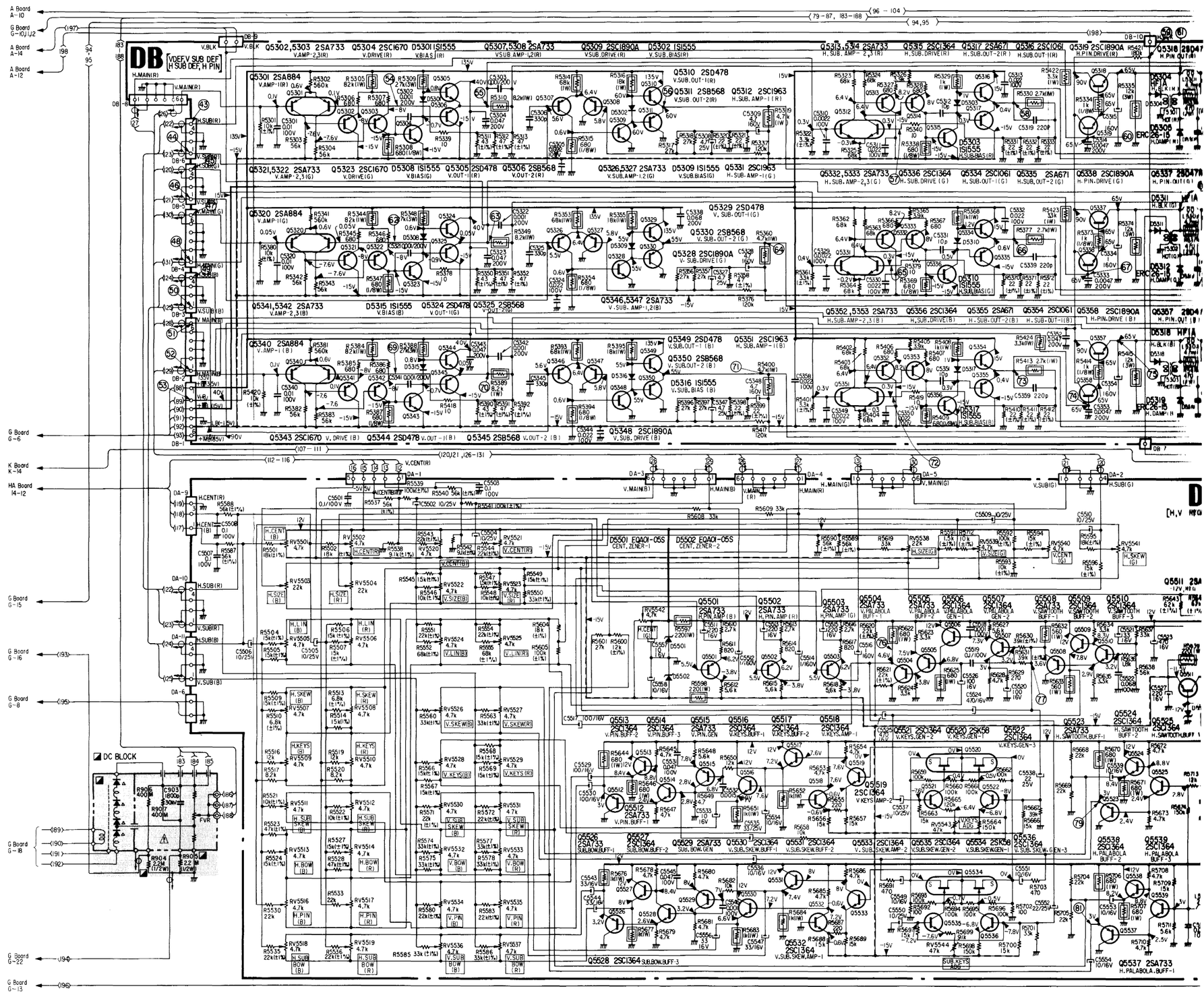
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note:

- All capacitors are in μF unless otherwise noted. p : μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. k : 1000Ω, M : 1000kΩ
- ⚠ : nonflammable resistor.
- △ : internal component.
- ▭ : panel designation.
- The components identified by ⊠ in this manaul have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊠ and repeat the adjustment until the specified value is achieved.
  (Refer to HV HOLD DOWN and HV REG Adjustments on page 42 – 44).
- When replacing the part in below table, be suer to perform the related adjustment.

Part replaced (◪)	Adjustment
G board, DC block R904, IC501, Q801, Q802, Q803, D502, D801, D802, D803, R517, R802, R803, R804, R809, R825, C806, C807, T801	HV HOLD DOWN ADJUSTMENT (R803/804) HV REG ADJUSTMENT (R815/816)
R905, Q806, Q807, D807, D808, D809, D810, R814, R815, R816, R826, Q808, Q904	HV REG ADJUSTMENT (R815/816)

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Reference numbers of the Q board differ from those indicated on the printed circuit board of the set.
- Read the reference numbers of the Q board by adding 1000 to those indicated.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 20,000-ohm-per-volt VOM.
- ◐ : adjustable without removing cabinet.
- ▭ : adjustment for repair.
- Readings are taken with a color-bar video signal input.
- Voltage variations may be noted due to normal production tolerances.
- ——— : B+ bus.



SCC-316A-A/SCC-317A-A KP-5020/7220

C D E F G H I

1 2 3 4 5

Q5302,5303 2SA733 Q5304 2SC1670 Q5301 IS1555 Q5307,5308 2SA733 Q5309 2SC1890A Q5302 IS1555 Q5313,5314 2SA733 Q5315 2SC1364 Q5317 2SA671 Q5316 2SC1061 Q5319 2SC1890A Q5318 2SD478

Q5310 2SD478 Q5311 2SB568 Q5312 2SC1963 Q5329 2SD478 Q5330 2SB568 Q5328 2SC1890A Q5346,5347 2SA733 Q5349 2SD478 Q5350 2SB568 Q5316 IS1555 Q5343 2SC1670 Q5344 2SD478 Q5345 2SB568 Q5348 2SC1890A

Q5332,5333 2SA733 Q5336 2SC1364 Q5334 2SC1061 Q5335 2SA671 Q5338 2SC1890A Q5337 2SD478 Q5311 HF1A Q5303 IS1555 Q5352,5353 2SA733 Q5356 2SC1364 Q5355 2SA671 Q5354 2SC1061 Q5358 2SC1890A Q5357 2SD478 Q5318 HF1A Q5310 IS1555 Q5320 2SB568 Q5317 IS1555

DA [H,V REGISTRTION]

Q5501 EQA01-05S CENT. ZENER-1 Q5502 EQA01-05S CENT. ZENER-2 Q5511 2SA733 Q5501 2SA733 Q5502 2SA733 Q5503 2SA733 Q5504 2SA733 Q5505 2SA733 Q5506 2SC1364 Q5507 2SC1364 Q5508 2SA733 Q5509 2SC1364 Q5510 2SC1364 Q5503 EQA01-12S Q5513 2SC1364 Q5514 2SC1364 Q5515 2SA733 Q5516 2SC1364 Q5517 2SC1364 Q5518 2SC1364 Q5523 2SA733 Q5524 2SC1364 Q5525 2SC1364 Q5526 2SA733 Q5527 2SC1364 Q5529 2SA733 Q5530 2SC1364 Q5531 2SC1364 Q5533 2SC1364 Q5535 2SC1364 Q5534 2SK58 Q5536 2SC1364 Q5538 2SC1364 Q5539 2SC1364 Q5532 2SC1364 Q5537 2SA733 Q5528 2SC1364

CR [R.OUT] Q701R 2SC1723 R.OUT

CG [G.OUT] Q701G 2SC1723 G.OUT

CB [B.OUT] Q701B 2SC1723 B.OUT

HB [SCRN]

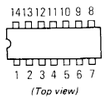
PICTURE TUBE SD-116 R

PICTURE TUBE SD-116 G

PICTURE TUBE SD-116 B

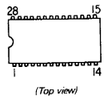
5-3. SEMICONDUCTORS

CX761
CX761A

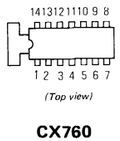


CX557

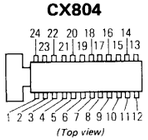
CX555
CX555A
CX556



CX095C

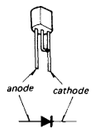


CX760
CX804

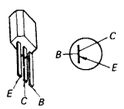


M51903L

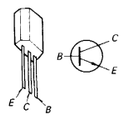
μPC574J



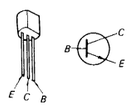
2SA1027R



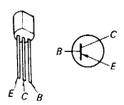
2SC403C



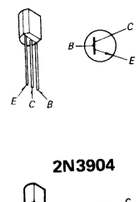
2SC1670
2SC1890A
2SC2230A



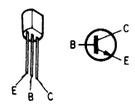
2SA733



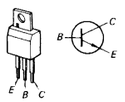
2SC1364



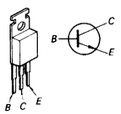
2N3904



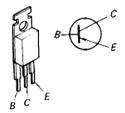
2SC1663
2SC1962



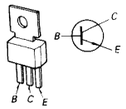
2SC1061
2SD478



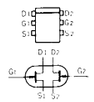
2SA671
2SB568



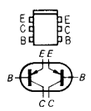
2SC1723



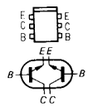
2SK58



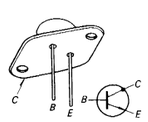
2SA884



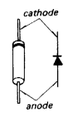
2SC1963



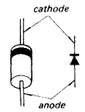
2SC1114
2SC1116A
2SC1413A



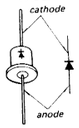
1S1555
10E2
RD5.6EZ7S
RD6.8E-B
RD9.1E
RD9.1E-B3Z
RD12E-B1Z
RD12E-C
RD13E-B
RD13E-B2Z



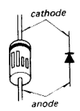
GP08D



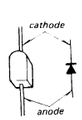
S34
SB2C



EQA01-05S
EQA01-15S
EQA01-09R
EQA01-10R
EQA01-12S
EQB01-05
EQB01-09
EQB01-10
EQB01-12Z
SIB01-02

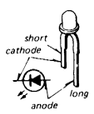


HF1A
HF1Z

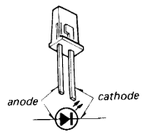


ERC26-15
GH3F
U05E
U05G
V06C
V09C
V30N

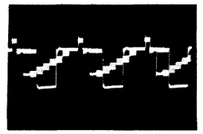
TLG124
TLR124
TLY124



SR108D

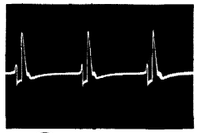


5-4. WAVEFORM

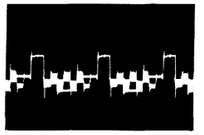


(1) 1.1Vp-p (H)

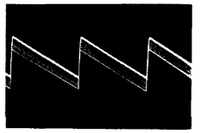
(7) 12.5Vp-p (H)



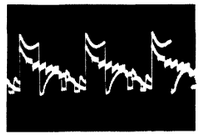
(13) 5.6Vp-p (H)



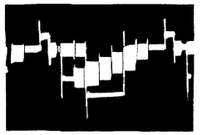
(19) 1.2Vp-p (H)



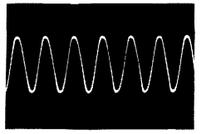
(25) 1.3Vp-p (V)



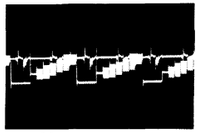
(2) 6Vp-p (H)



(8) 1.6Vp-p (H)

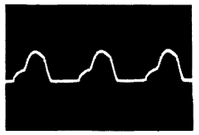


(14) 2Vp-p 3.58MHz



(20) 1.8Vp-p (H)

(26) 12Vp-p (H)



(3) 3Vp-p (H)

(9) 1.6Vp-p (H)

(15) 1.2Vp-p (H)

(21) 3.6Vp-p (V)

(27) 1.5Vp-p (H)

(4) 31Vp-p (H)

(10) 0.24Vp-p (H)

(16) 2.8Vp-p (H)

(22) 2Vp-p (V)

(28) 2.7Vp-p (H)

(5) 12Vp-p (H)

(11) 0.62Vp-p (H)

(17) 1Vp-p (H)

(23) 0.36Vp-p (V)

(29) 3.4Vp-p (H)

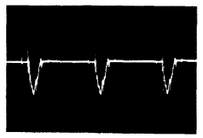
(6) 14Vp-p (H)

(12) 0.62Vp-p (H)

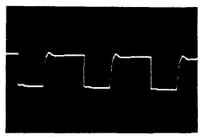
(18) 1.2Vp-p (H)

(24) 0.6Vp-p (V)

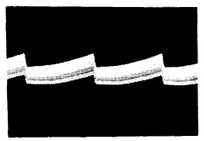
(30) 0.8Vp-p (H)



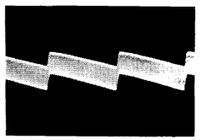
31 0.5Vp-p (H)



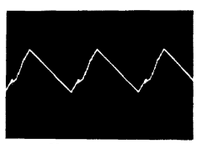
37 85Vp-p (H)



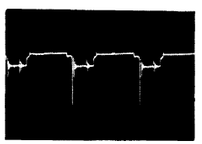
43 0.28Vp-p (V)



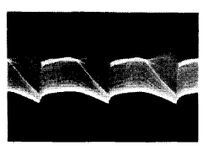
49 0.16Vp-p (V)



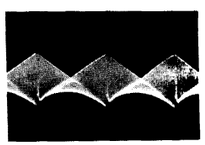
32 2Vp-p (H)



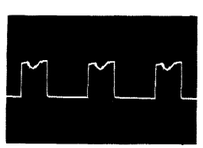
38 17Vp-p (H)



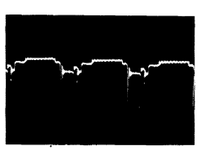
44 0.3Vp-p (H)



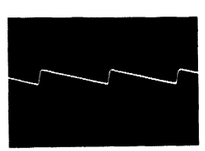
50 0.26Vp-p (V)



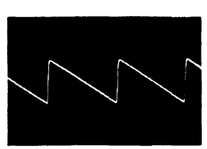
33 1.8Vp-p (H)



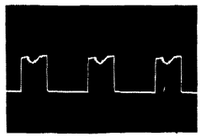
39 17Vp-p (H)



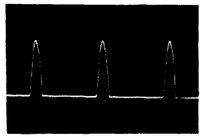
45 0.04Vp-p (V)



51 2Vp-p (V)



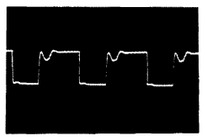
34 1.6Vp-p (H)



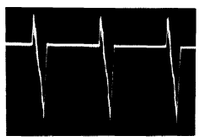
40 920Vp-p (H)

46 0.8Vp-p (V)

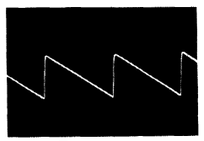
52 5.6Vp-p (V)



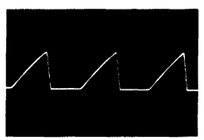
35 82Vp-p (H)



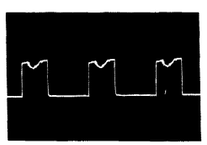
41 520Vp-p (H)



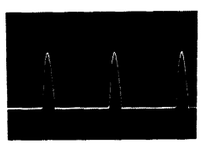
47 2Vp-p (V)



53 90Vp-p (V)

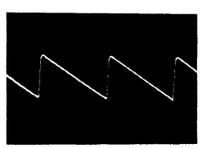


36 1.6Vp-p (H)

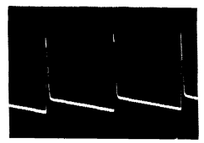


42 920Vp-p (H)

48 5.6Vp-p (V)



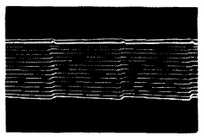
54 2Vp-p (V)



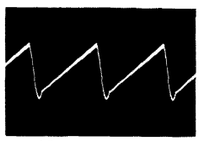
55 76Vp-p (V)

61 9Vp-p (V)

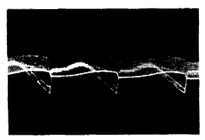
67 9Vp-p (V)



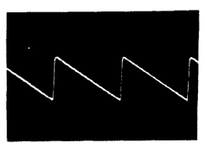
73 15Vp-p (V)



79 2.8Vp-p (H)



56 19Vp-p (V)

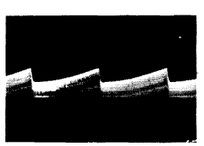


62 2.1Vp-p (V)

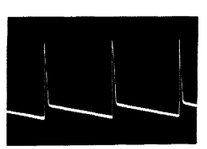
68 9Vp-p (V)

74 9Vp-p (V)

80 70Vp-p (H)

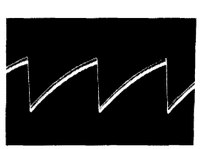


57 0.3Vp-p (V)

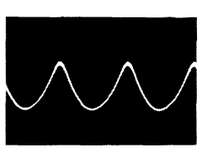


63 80Vp-p (V)

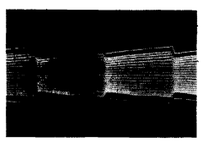
69 2.1Vp-p (V)



75 9Vp-p (V)



81 2.4Vp-p (H)



58 14Vp-p (V)

64 9Vp-p (V)

70 80Vp-p (V)

76 2.6Vp-p (V)

82 64Vp-p (H)

59 66Vp-p (H)

65 0.04Vp-p (V)

71 36Vp-p (V)

77 2.6Vp-p (V)

83 28Vp-p (H)

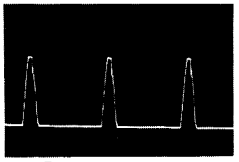
60 9Vp-p (V)

66 3.8Vp-p (V)

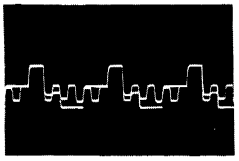
72 0.4Vp-p (V)

78 2.8Vp-p (V)

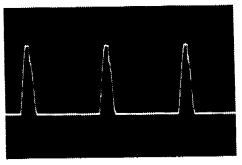
84 90Vp-p (H)



(85) 28Vp-p (H)



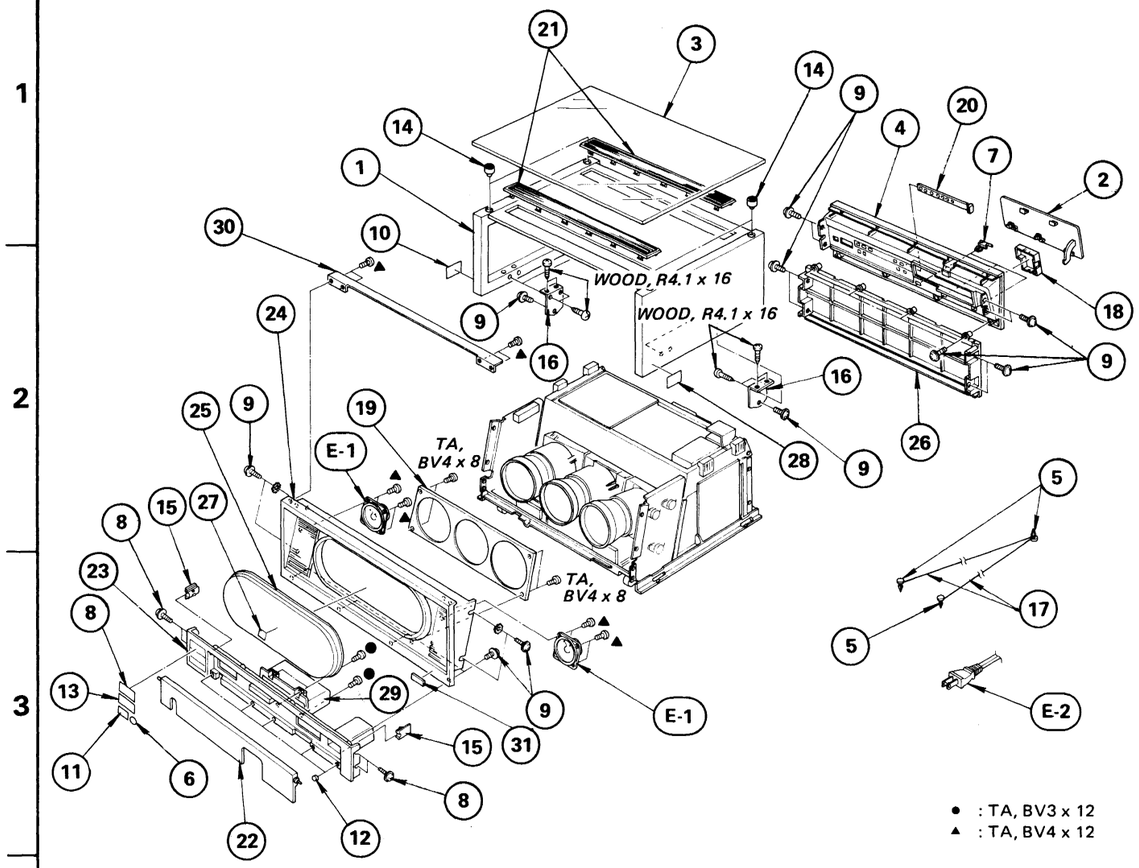
(86) 85Vp-p (H)



(87) 28Vp-p (H)

SECTION 6
EXPLODED VIEWS

(1) CABINET

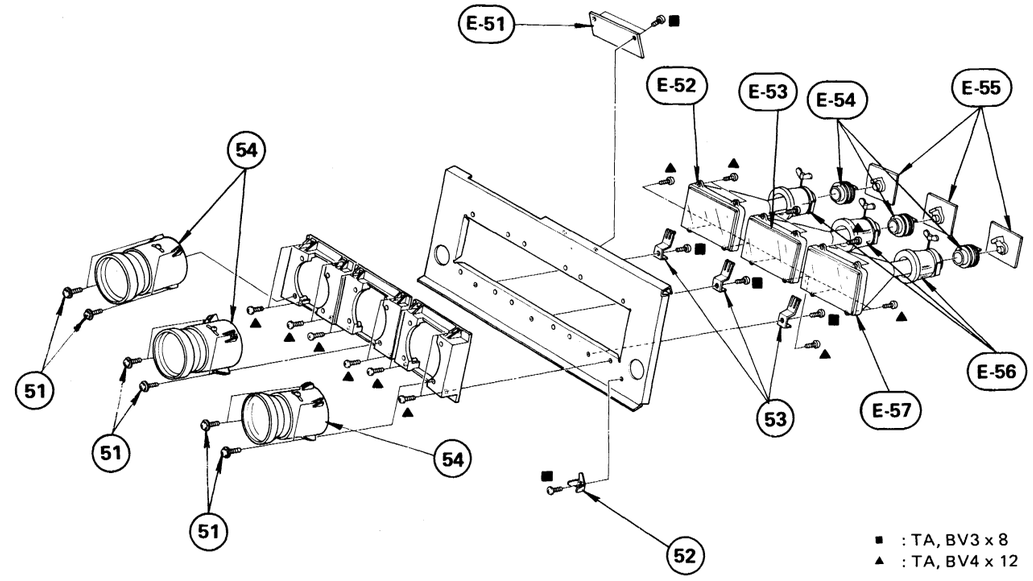


No.	Part No	Description	Remark
1	X-4346-402-0	CABINET ASSY	
2	X-4346-406-0	DOOR ASSY, CONTROL	
3	X-4346-409-0	GLASS ASSY, TOP	
4	X-4346-414-0	PANEL ASSY, CONTROL	2,6,17
5	3-641-283-00	CLIP, CANOE	
6	3-701-915-01	LABEL, UL	
7	3-703-035-11	SHAFT, LID	
8	3-703-238-00	LABEL, MAIN CAUTION	
9	3-703-251-00	SCREW (+M4), IT TAPPING	
10	3-703-260-01	LABEL, MATERIAL	
11	♦:4-017-439-00	LABEL, X-RAY	
12	4-314-871-00	CUSHION	
13	♦:4-346-402-00	LABEL, MODEL NUMBER (KP-7220)	
13	♦:4-346-403-00	LABEL, MODEL NUMBER (KP-5020)	
14	4-346-411-00	CUSHION, GLASS	
15	4-346-412-00	RETAINER, DOOR	
16	♦:4-346-417-00	BRACKET (A), CABINET	
17	4-346-420-00	CORD (C), SET UP (KP-7220)	
17	4-346-421-00	CORD (B), SET UP (KP-5020)	
18	4-346-426-00	COVER, HATCH SWITCH	
19	♦:4-346-443-00	COVER (C), MIRROR BARREL	(KP-5020)
19	♦:4-346-453-00	COVER (B), MIRROR BARREL	(KP-7220)
20	4-346-448-00	HOLDER, LABEL	
21	4-346-463-00	VENTILATION	
22	4-346-464-00	DOOR, CONNECTOR	
23	4-346-465-00	PANEL, REAR	
24	4-346-466-00	PANEL, LENS	
25	4-346-468-00	COVER, LENS	
26	4-346-469-00	PANEL, UNDER	
27	♦:4-346-473-00	LABEL, LENS COVER	
28	♦:4-346-474-01	LABEL, SUB CAUTION	
29	4-346-475-01	BOX, CORD	
30	4-346-476-01	STAY, SUB, LENS PANEL	
31	4-849-833-00	EMBLEM, SONY	

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(2) PICTURE TUBE

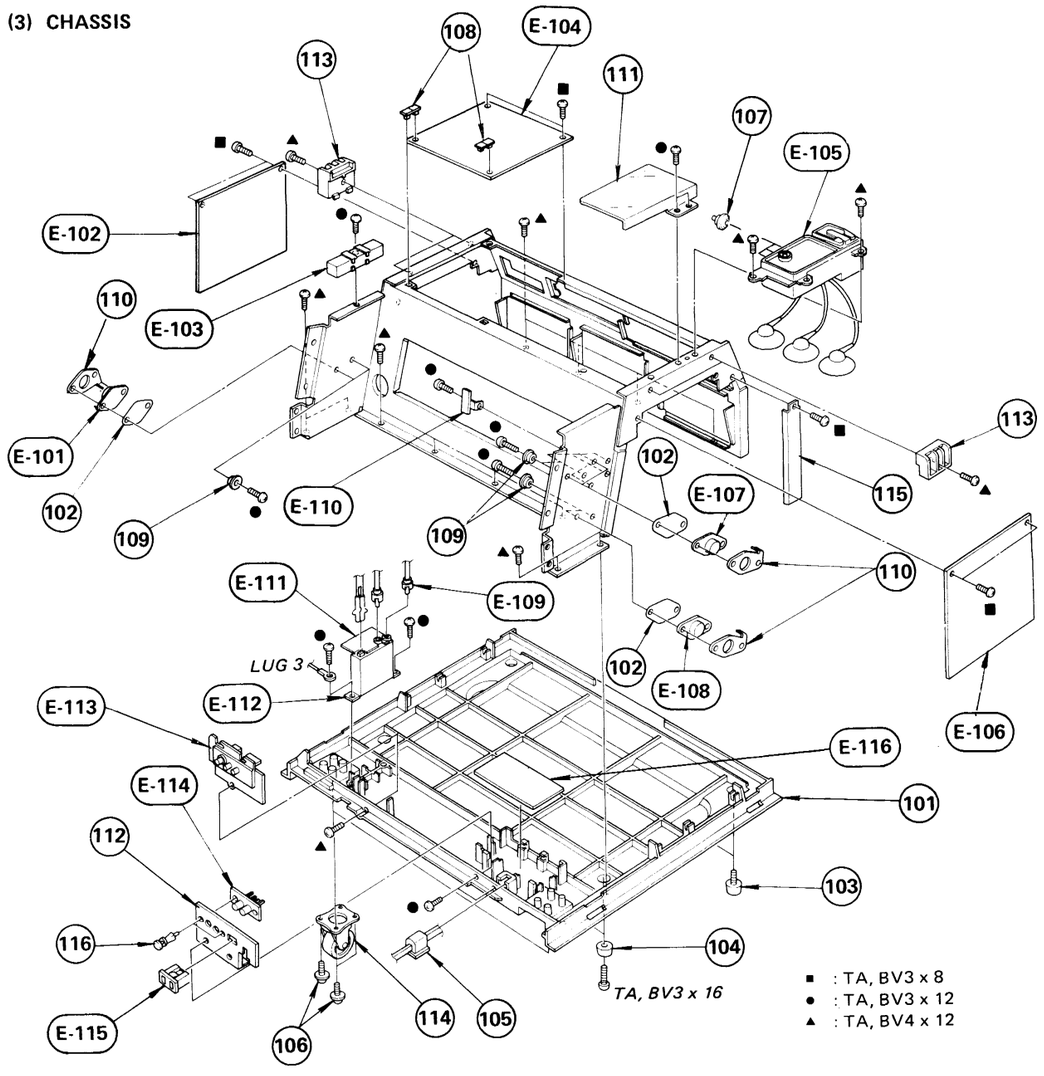


No.	Part No	Description	Remark
51	4-302-934-00	SCREW, TAPPING, +PW 4X12	
52	♦:4-303-793-00	TERMINAL, GROUND	
53	4-332-209-00	SPRING	
54	4-346-401-00	DELTA (2), LENS	

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(3) CHASSIS

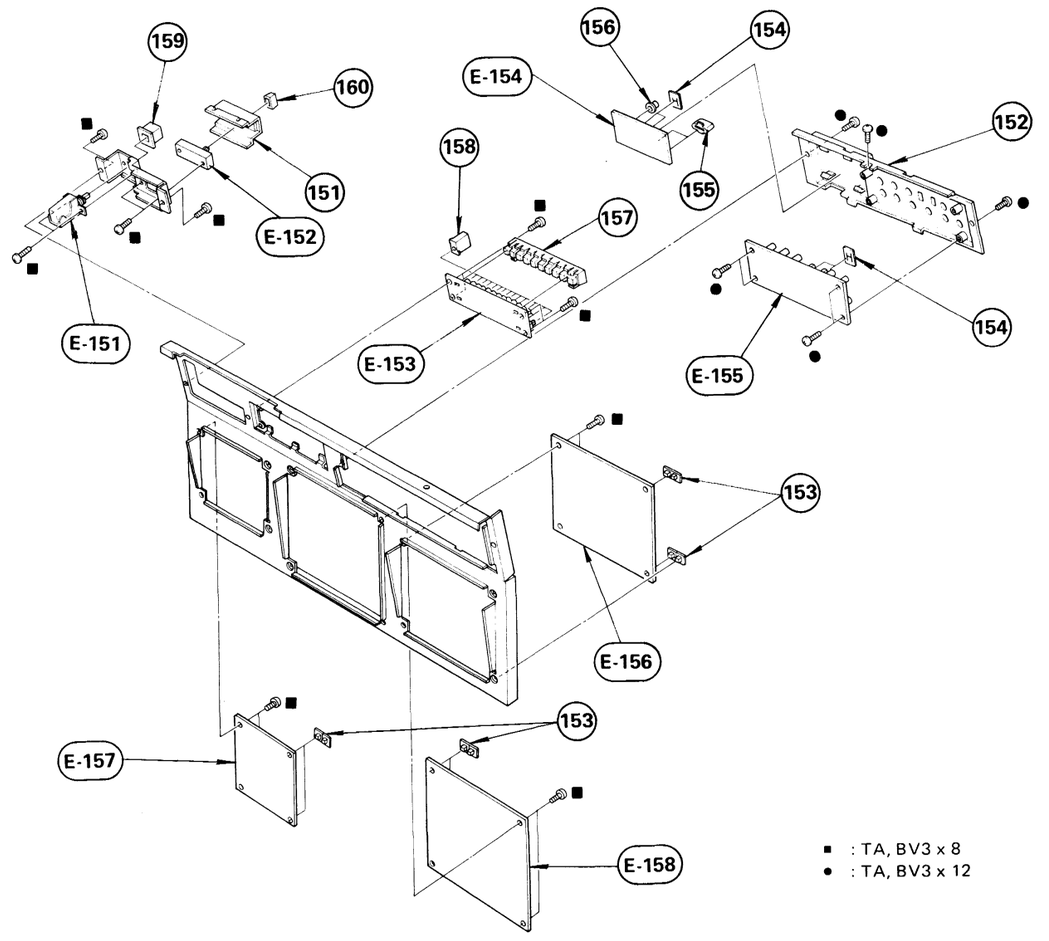


No.	Part No	Description	Remark
101	X-4346-415-0	BASE ASSY	103,104 106,114
102	3-701-353-00	SPACER, MICA	
103	3-703-369-00	ADJUSTOR	
104	3-703-370-00	FOOT, RUBBER	
105	⚠4-022-115-00	HOLDER, AC CORD	
106	4-302-934-00	TA, PW 4X12	
107	⚠4-308-858-00	CAP, LEAD, FC	
108	♦:4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
109	4-313-734-00	BUSHING TR,Y	
110	♦:4-314-938-01	RETAINER (TO-3), TRANSISTOR	
111	♦:4-346-419-00	COVER, FBT	
112	4-346-423-00	PLATE, TERMINAL, CONNECTOR	
113	♦:4-346-431-00	HOLDER, CABINET	
114	4-346-435-00	CASTER	
115	♦:4-346-436-00	STAY, G BRACKET	
116	4-812-134-00	RIVET NYLON, 3.5	

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(4) CONTROL PANEL

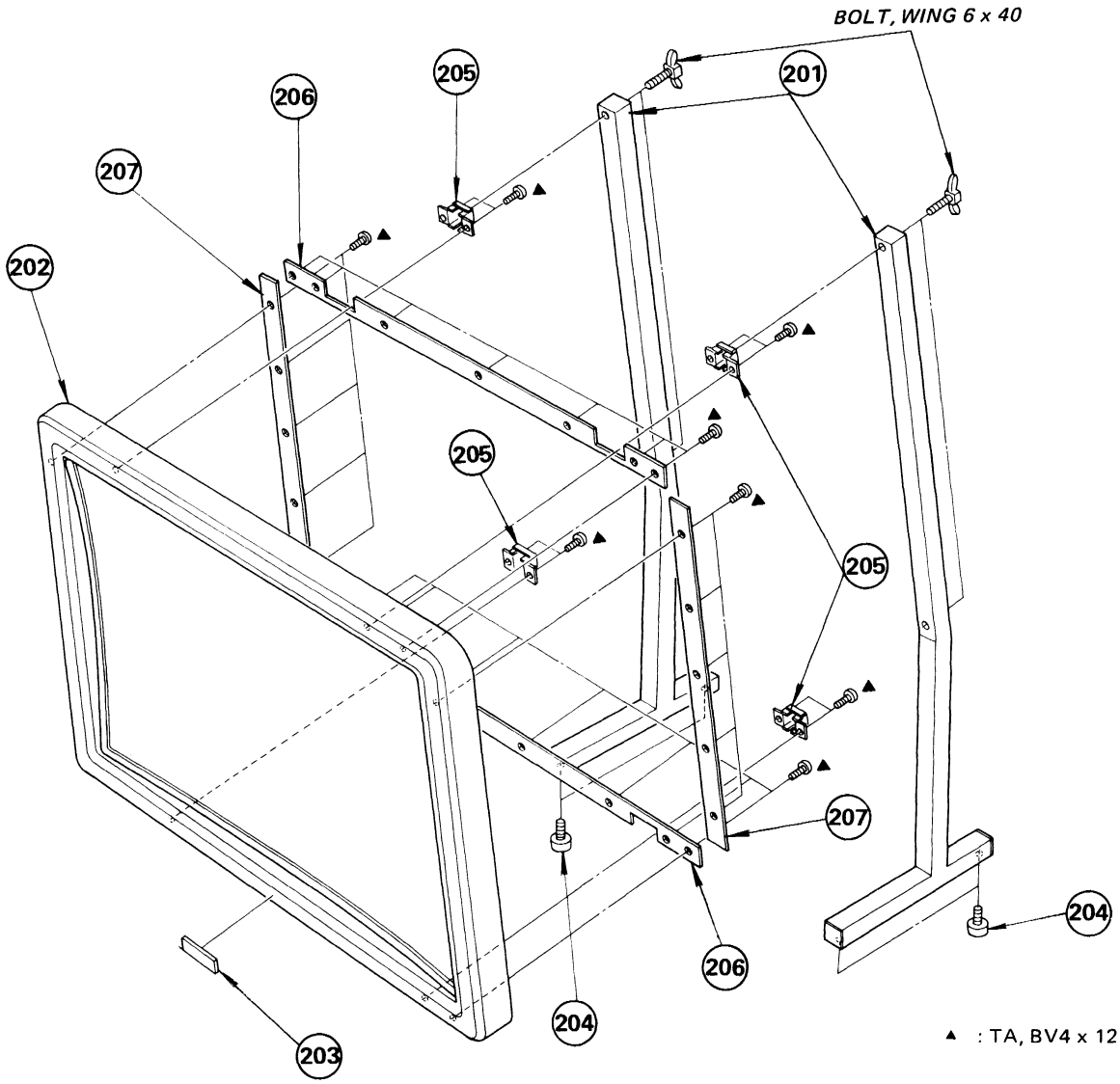


No.	Part No	Description	Remark
151	X-4346-403-0	BASE ASSY, SLIDE CONTROL	
152	♦:X-4346-410-0	CASE ASSY, CONTROL	
153	♦:4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
154	4-314-869-00	INSULATOR,SLIDE SWITCH	
155	4-335-304-00	BUTTON, TUNING	
156	4-335-306-00	BUTTON, CLEAR	
157	♦:4-338-114-00	HOLDERN NEON LAMP	
158	4-346-408-00	BUTTON, TUNING	
159	4-346-409-00	BUTTON, POWER	
160	4-346-410-00	KNOB, SLIDE CONTROL	

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

(5) SCREEN (KP-5020)



No.	Part No	Description	Remark
201	X-4346-405-0	POLE (B) ASSY, SCREEN	
202	X-4346-411-0	SCREEN ASSY (B)	
203	3-651-703-00	EMBLEM, SONY	
204	3-703-369-00	ADJUSTOR	
205	♦:4-346-414-00	BRACKET (B), SCREEN	
206	♦:4-346-429-00	HOLDER (A), SCREEN	
207	♦:4-346-430-00	HOLDER (B), SCREEN	

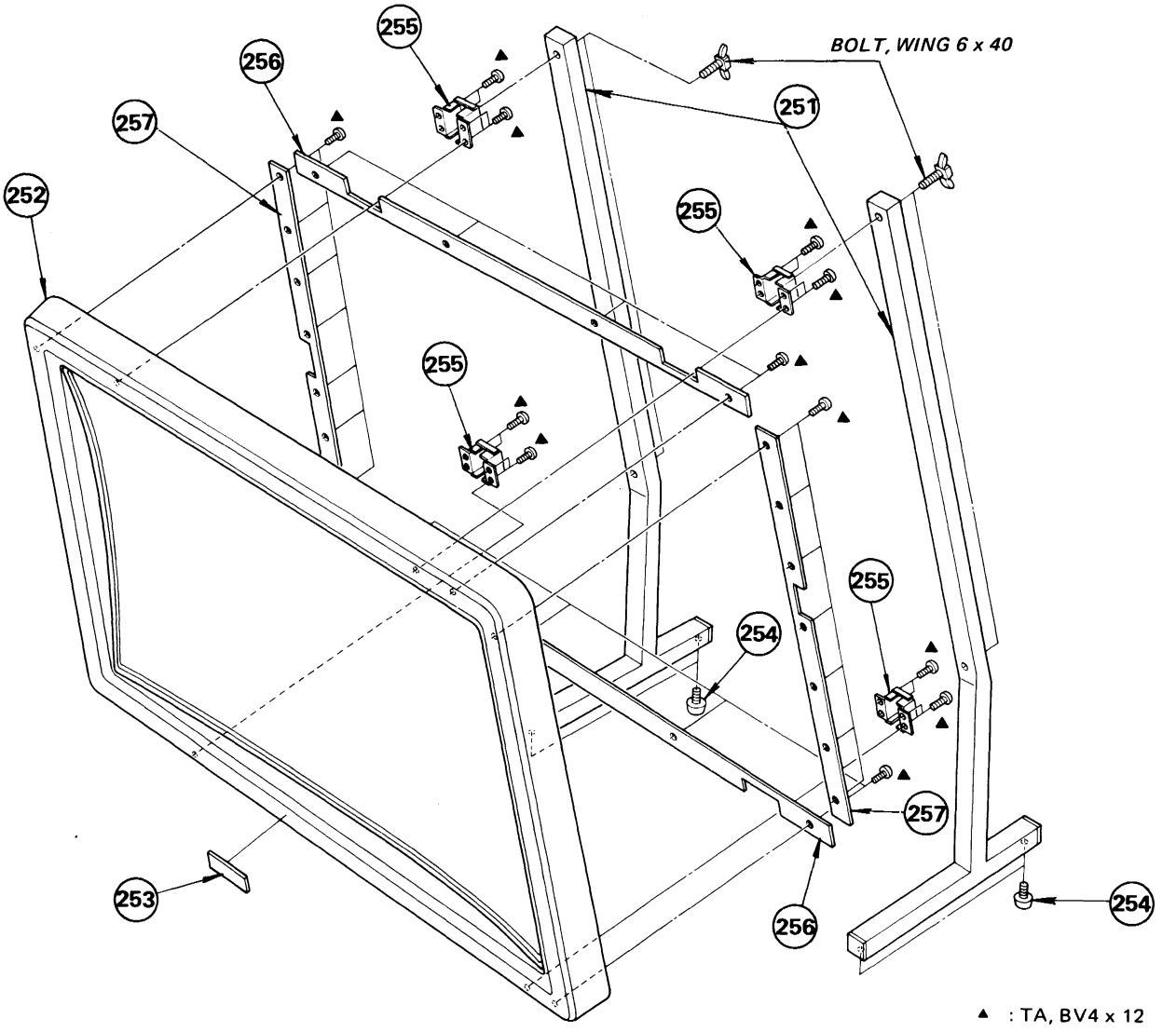
NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service. The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

A B C D

1 2 3

(6) SCREEN (KP-7220)



No.	Part No	Description	Remark
251	X-4346-408-0	POLE (C) ASSY, SCREEN	
252	X-4346-412-0	SCREEN ASSY (C)	
253	3-651-703-00	EMBLEM, SONY	
254	3-703-369-00	ADJUSTOR	
255	♦:4-346-415-00	BRACKET (C), SCREEN	
256	♦:4-346-433-00	HOLDER (C), SCREEN	
257	♦:4-346-434-00	HOLDER (D), SCREEN	

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 7
ELECTRICAL PARTS LIST

A F

Ref.No	Part No	Description				Remark
	♦:1-603-225-00	F BOARD				E-116
	1-533-146-00	HOLDER, FUSE				
		CAPACITOR				
C601 ⚠	1-108-745-00	MYLAR	0.22MF	20%	125V	
C602 ⚠	1-108-745-00	MYLAR	0.22MF	20%	125V	
C603	1-102-189-00	CERAMIC	0.0047MF		125V	
C604	1-102-189-00	CERAMIC	0.0047MF		125V	
C605	1-125-186-00	ELECT(BLOCK)	560MF		200V	
C606	1-102-085-00	CERAMIC	0.0047MF		500V	
C607	1-121-757-00	ELECT	33MF		160V	
C608	1-102-030-00	CERAMIC	330PF	10%	500V	
C609	1-121-999-00	ELECT	10MF		160V	
		DIODE				
D601	=>8-719-911-55	DIODE U05G				
D602	=>8-719-911-55	DIODE U05G				
D603	=>8-719-911-55	DIODE U05G				
D604	=>8-719-911-55	DIODE U05G				
D605	=>8-719-200-02	DIODE 10E2				
		CONNECTOR				
F1	♦:1-506-349-21	3P PLUG (L)				
F2	♦:1-506-347-21	4P PLUG				
F3	♦:1-506-371-00	2P PLUG (L)				
		FUSE				
F601 ⚠	1-532-272-11	FUSE				
F602 ⚠	1-532-555-00	FUSE, GLASS TUBE				
		IC				
IC601 ⚠	1-231-443-00	MODUL, POWER				
		COIL				
L601 ⚠	1-407-365-00	COIL, CHOKE				
		TRANSISTOR				
Q601	=>8-765-170-01	TRANSISTOR 2SC1962				
		RESISTOR				
R601 ⚠	1-202-665-15	COMPSITION	6.8M	5%	1/2W	
R602 ⚠	1-202-645-00	COMPSITION	1M	5%	1/2W	
R603 ⚠	1-205-589-00	CEMENT-COATED	1.8	10%	10W	
R604	1-214-599-00	METAL	68K	5%	1W	F
R605	1-206-688-00	METAL	10K	5%	2W	F
R606	1-213-161-00	METAL	33K	5%	1W	F
R607	1-246-521-00	CARBON	100K	5%	1/4W	
R608	1-205-588-00	CEMENT-COATED	4.7	10%	7W	
R609	1-246-991-00	CARBON	150	5%	1/8W	F
R610	1-212-724-00	METAL	820K	1%	1/2W	

Ref.No	Part No	Description				Remark
		TRANSFORMER				
T601 ⚠	1-421-259-00	COIL, LINE FILTER				
T602 ⚠	1-421-259-00	COIL, LINE FILTER				
		POST PIN				
TP91	♦:1-536-354-00	POST PIN				
TP92	♦:1-536-354-00	POST PIN				
TP93	♦:1-536-354-00	POST PIN				
	**********					
	♦:A-1295-400-A	A BOARD, COMPLETE				E-158
	♦:4-334-250-00	CASE, SHIELD (MAIN)				
	♦:4-334-251-00	LID, UPPER, SHIELD CASE				
	♦:4-334-252-00	LID, REAR, SHIELD CASE				
		CONNECTOR				
A1	♦:1-506-349-21	3P PLUG (L)				
A2	♦:1-506-347-21	4P PLUG				
A7	♦:1-508-766-00	4P PLUG (M)				
A8	♦:1-508-766-00	4P PLUG (M)				
A9	♦:1-508-766-00	4P PLUG (M)				
A10	♦:1-508-766-00	4P PLUG (M)				
A12	♦:1-508-784-00	1P PLUG				
A13	♦:1-508-784-00	1P PLUG				
A14	♦:1-508-786-00	2P PLUG (M)				
A15	♦:1-560-224-00	PLUG, CONNECTOR (2.5MM) 10P				
A16	♦:1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P				
A17	♦:1-508-765-00	3P PLUG (M)				
A18	♦:1-508-765-00	3P PLUG (M)				
A19	♦:1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P				
A20	♦:1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P				
A22	♦:1-508-784-00	1P PLUG				
		CAPACITOR				
C201	1-101-888-00	CERAMIC	68PF	5%	50V	
C205	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C206	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C207	1-161-377-00	CERAMIC	0.0047MF	20%	50V	
C208	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C209	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C211	1-108-638-00	MYLAR	0.1MF	10%	100V	
C212	1-123-353-00	ELECT	2.2MF	20%	50V	
C213	1-123-351-00	ELECT	0.47MF	20%	50V	
C214	1-123-354-00	ELECT	3.3MF	20%	50V	
C215	1-102-503-00	CERAMIC	3PF	0.25PF	50V	
C216	1-102-503-00	CERAMIC	3PF	0.25PF	50V	
C217	1-102-963-00	CERAMIC	33PF	5%	50V	
C218	1-102-513-00	CERAMIC	18PF	5%	50V	
C219	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C220	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C221	1-123-316-00	ELECT	10MF	20%	16V	

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : μH

A

Ref.No	Part No	Description			Remark
C222	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C225	1-101-006-00	CERAMIC	0.047MF		50V
C226	1-161-295-00	CERAMIC	15PF	5%	50V
C228	1-123-352-00	ELECT	1MF	20%	50V
C229	1-101-118-00	CERAMIC	0.01MF	20%	50V
C230	1-102-114-00	CERAMIC	470PF	10%	50V
C231	1-108-628-11	MYLAR	0.015MF	10%	100V
C232	1-123-351-00	ELECT	0.47MF	20%	50V
C233	1-123-324-00	ELECT	1000MF	20%	16V
C234	1-123-316-00	ELECT	10MF	20%	16V
C239	1-123-316-00	ELECT	10MF	20%	16V
C240	1-102-496-00	CERAMIC	82PF	5%	50V
C241	1-102-518-00	CERAMIC	33PF	5%	50V
C242	1-102-494-00	CERAMIC	68PF	5%	50V
C244	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C245	1-161-279-00	CERAMIC	10PF	5%	50V
C246	1-123-316-00	ELECT	10MF	20%	16V
C250	1-108-630-11	MYLAR	0.022MF	10%	100V
C251	1-161-323-00	CERAMIC	0.001MF	10%	50V
C302	1-161-271-00	CERAMIC	100PF	5%	50V
C303	1-102-816-00	CERAMIC	120PF	5%	50V
C304	1-123-316-00	ELECT	10MF	20%	16V
C305	1-123-316-00	ELECT	10MF	20%	16V
C308	1-101-004-00	CERAMIC	0.01MF		50V
C309	1-102-820-00	CERAMIC	330PF	5%	50V
C310	1-123-351-00	ELECT	0.47MF	20%	50V
C311	1-108-619-00	MYLAR	0.0027MF	10%	100V
C312	1-123-351-00	ELECT	0.47MF	20%	50V
C314	1-123-316-00	ELECT	10MF	20%	16V
C315	1-123-354-00	ELECT	3.3MF	20%	50V
C316	1-102-963-00	CERAMIC	33PF	5%	50V
C317	1-102-822-00	CERAMIC	390PF	5%	50V
C318	1-123-447-00	ELECT	0.22MF	20%	50V
C319	1-123-328-00	ELECT	4.7MF	20%	25V
C320	1-123-447-00	ELECT	0.22MF	20%	50V
C321	1-101-888-00	CERAMIC	68PF	5%	50V
C323	1-102-947-00	CERAMIC	10PF	5%	50V
C324	1-102-959-00	CERAMIC	22PF	5%	50V
C327	1-161-270-00	CERAMIC	82PF	5%	50V
C328	1-102-973-00	CERAMIC	100PF	5%	50V
C330	1-123-316-00	ELECT	10MF	20%	16V
C331	1-123-332-00	ELECT	47MF	20%	25V
C332	1-102-106-00	CERAMIC	100PF	10%	50V
C333	1-102-106-00	CERAMIC	100PF	10%	50V
C334	1-102-106-00	CERAMIC	100PF	10%	50V
C335	1-123-352-00	ELECT	1MF	20%	50V
C336	1-123-351-00	ELECT	0.47MF	20%	50V
C338	1-101-888-00	CERAMIC	68PF	5%	50V
C339	1-123-252-00	ELECT	1MF		160V
C340	1-123-352-00	ELECT	1MF	20%	50V
C341	1-123-352-00	ELECT	1MF	20%	50V
C342	1-123-352-00	ELECT	1MF	20%	50V
C343	1-123-352-00	ELECT	1MF	20%	50V
C344	1-123-352-00	ELECT	1MF	20%	50V
C345	1-108-618-11	MYLAR	0.0022MF	10%	100V

FILTER

CF201	1-527-260-00	CERAMIC FILTER
CF202	1-409-332-00	CERAMIC TRAP

TRIMMER

CV301	1-141-212-00	CAP, TRIMMER

DIODE

D201	8-719-815-55	DIODE 1S1555
D202	8-719-113-07	DIODE RD13E-B
D203	8-719-815-55	DIODE 1S1555
D204	8-719-815-55	DIODE 1S1555
D205	8-719-815-55	DIODE 1S1555
D301	8-719-815-55	DIODE 1S1555
D302	8-719-815-55	DIODE 1S1555
D303	8-719-815-55	DIODE 1S1555
D304	8-719-815-55	DIODE 1S1555
D305	=>8-719-200-02	DIODE 10E2
D306	8-719-815-55	DIODE 1S1555
D307	8-719-815-55	DIODE 1S1555

DELAY LINE

DL301	1-415-164-00	DELAY LINE (WITH TRAP)

IC

IC201	8-759-600-95	IC CX-095C
IC202	8-759-600-05	IC CX-555A
IC301	8-759-105-56	IC CX-556

SOCKET PLUG

J201	1-526-575-00	SOCKET, PLUG

COIL

L201	1-407-694-11	MICRO INDUCTOR 12UH
L202	1-425-613-00	COIL,AIR-CORE,QF TYPE
L203	1-407-692-11	MICRO INDUCTOR 8.2UH
L205	1-407-701-11	MICRO INDUCTOR 47UH
L209	1-407-705-11	MICRO INDUCTOR 100UH
L302	1-407-698-11	MICRO INDUCTOR 27UH
L303	1-407-203-51	MICRO INDUCTOR 5.6MMH
L304	1-407-702-11	MICRO INDUCTOR 56UH
L305	1-407-698-11	MICRO INDUCTOR 27UH
L307	1-407-713-11	MICRO INDUCTOR 470UH

TRANSISTOR

Q202	8-729-663-47	TRANSISTOR 2SC1364
Q203	=>8-765-170-01	TRANSISTOR 2SC1962
Q301	8-729-663-47	TRANSISTOR 2SC1364
Q304	8-724-375-01	TRANSISTOR 2SC403C
Q305	8-724-375-01	TRANSISTOR 2SC403C
Q306	8-724-375-01	TRANSISTOR 2SC403C
Q307	8-729-663-47	TRANSISTOR 2SC1364
Q308	8-729-663-47	TRANSISTOR 2SC1364
Q309	=>8-729-612-77	TRANSISTOR 2SA1027R
Q310	8-729-663-47	TRANSISTOR 2SC1364
Q311	8-729-663-47	TRANSISTOR 2SC1364

RESISTOR

Ref.No	Part No	Description				Remark
R201	1-246-431-00	CARBON	18	5%	1/4W	
R203	1-246-422-00	CARBON	7.5	5%	1/4W	
R208	1-246-481-00	CARBON	2.2K	5%	1/4W	
R209	1-246-497-00	CARBON	10K	5%	1/4W	
R210	1-246-463-00	CARBON	390	5%	1/4W	
R214	1-246-457-00	CARBON	220	5%	1/4W	
R215	1-246-461-00	CARBON	330	5%	1/4W	
R216	1-246-483-00	CARBON	2.7K	5%	1/4W	
R217	1-246-519-00	CARBON	82K	5%	1/4W	
R218	1-246-473-00	CARBON	1K	5%	1/4W	
R219	1-246-505-00	CARBON	22K	5%	1/4W	
R220	1-246-517-00	CARBON	68K	5%	1/4W	
R221	1-246-469-00	CARBON	680	5%	1/4W	
R222	1-246-473-00	CARBON	1K	5%	1/4W	
R224	1-246-465-00	CARBON	470	5%	1/4W	
R226	1-246-475-00	CARBON	1.2K	5%	1/4W	
R234	1-246-457-00	CARBON	220	5%	1/4W	
R235	1-246-451-00	CARBON	120	5%	1/4W	
R236	1-246-481-00	CARBON	2.2K	5%	1/4W	
R237	1-246-984-11	CARBON	22	5%	1/8W	F
R238	1-246-477-00	CARBON	1.5K	5%	1/4W	
R239	1-246-489-00	CARBON	4.7K	5%	1/4W	
R240	1-246-485-00	CARBON	3.3K	5%	1/4W	
R241	1-246-489-00	CARBON	4.7K	5%	1/4W	
R243	1-206-529-00	METAL	56	5%	3W	F
R244	1-212-368-00	METAL	4.7	5%	1W	F
R247	1-246-473-00	CARBON	1K	5%	1/4W	
R250	1-213-147-00	METAL	2.2K	5%	1W	F
R301	1-246-479-00	CARBON	1.8K	5%	1/4W	
R302	1-246-479-00	CARBON	1.8K	5%	1/4W	
R306	1-246-483-00	CARBON	2.7K	5%	1/4W	
R307	1-246-443-00	CARBON	56	5%	1/4W	
R310	1-246-469-00	CARBON	680	5%	1/4W	
R311	1-246-505-00	CARBON	22K	5%	1/4W	
R315	1-246-473-00	CARBON	1K	5%	1/4W	
R316	1-246-477-00	CARBON	1.5K	5%	1/4W	
R317	1-246-461-00	CARBON	330	5%	1/4W	
R318	1-246-461-00	CARBON	330	5%	1/4W	
R320	1-246-469-00	CARBON	680	5%	1/4W	
R321	1-246-461-00	CARBON	330	5%	1/4W	
R328	1-246-467-00	CARBON	560	5%	1/4W	
R329	1-246-457-00	CARBON	220	5%	1/4W	
R330	1-246-457-00	CARBON	220	5%	1/4W	
R331	1-246-487-00	CARBON	3.9K	5%	1/4W	
R332	1-246-449-00	CARBON	100	5%	1/4W	
R340	1-246-449-00	CARBON	100	5%	1/4W	
R341	1-246-467-00	CARBON	560	5%	1/4W	
R342	1-246-467-00	CARBON	560	5%	1/4W	
R343	1-246-487-00	CARBON	3.9K	5%	1/4W	
R344	1-246-449-00	CARBON	100	5%	1/4W	
R345	1-246-467-00	CARBON	560	5%	1/4W	
R346	1-246-467-00	CARBON	560	5%	1/4W	
R347	1-246-487-00	CARBON	3.9K	5%	1/4W	
R348	1-246-449-00	CARBON	100	5%	1/4W	
R349	1-246-467-00	CARBON	560	5%	1/4W	
R350	1-246-467-00	CARBON	560	5%	1/4W	
R351	1-246-487-00	CARBON	3.9K	5%	1/4W	
R352	1-246-509-00	CARBON	33K	5%	1/4W	
R353	1-246-481-00	CARBON	2.2K	5%	1/4W	
R354	1-246-497-00	CARBON	10K	5%	1/4W	
R355	1-246-485-00	CARBON	3.3K	5%	1/4W	
R356	1-246-509-00	CARBON	33K	5%	1/4W	
R357	1-246-485-00	CARBON	3.3K	5%	1/4W	
R358	1-246-489-00	CARBON	4.7K	5%	1/4W	
R359	1-246-485-00	CARBON	3.3K	5%	1/4W	
R360	1-246-497-00	CARBON	10K	5%	1/4W	
R361	1-246-493-00	CARBON	6.8K	5%	1/4W	
R362	1-246-525-00	CARBON	150K	5%	1/4W	
R363	1-211-471-00	CARBON	6.8K	5%	1/8W	F
R364	1-246-521-00	CARBON	100K	5%	1/4W	
R365	1-246-515-00	CARBON	56K	5%	1/4W	
R366	1-246-507-00	CARBON	27K	5%	1/4W	
R370	1-246-517-00	CARBON	68K	5%	1/4W	
R371	1-246-495-00	CARBON	8.2K	5%	1/4W	
R372	1-246-504-00	CARBON	20K	5%	1/4W	

VARIABLE RESISTOR

RV201	1-222-518-12	RES, ADJ, CARBON 4.7K
RV202	1-222-518-12	RES, ADJ, CARBON 4.7K
RV307	1-224-552-00	RES, ADJ, CARBON 470K
RV308	1-222-518-12	RES, ADJ, CARBON 4.7K
RV310	1-222-785-12	RES, ADJ, CARBON 2.2K
RV311	1-222-785-12	RES, ADJ, CARBON 2.2K
RV312	1-222-518-12	RES, ADJ, CARBON 4.7K

TRANSFORMER

T201	1-409-319-00	COIL, TRAP
T202	1-409-318-00	COIL, TRAP
T203	1-404-181-00	COIL, VIF
T204	1-404-182-00	COIL, VIF
T205	1-404-181-00	COIL, VIF
T206	1-403-360-00	COIL, SIF
T207	1-403-871-00	SIFT-2 COIL
T208	1-404-179-00	FILTER, HELICAL
T301	1-425-995-00	TRANSFORMER, INPUT

NOTE:

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- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : μH

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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RESISTORS
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COILS
- MMH : mH, UH : μH

A MJ MB M

Ref.No	Part No	Description			Remark
		POST PIN			
TP12	♦:1-536-354-00	POST PIN			
TP15	♦:1-536-354-00	POST PIN			
TP16	♦:1-536-354-00	POST PIN			
TP42	♦:1-536-354-00	POST PIN			
TP93	♦:1-536-354-00	POST PIN			
		CRYSTAL			
X301	1-527-396-00	CRYSTAL, OSC			
**********					
	♦:1-603-230-00	MJ BOARD			E-154
		CAPACITOR			
C2201	1-123-353-00	ELECT	2.2MF	20%	50V
C2202	1-123-352-00	ELECT	1MF	20%	50V
		DIODE			
D2201	8-719-101-08	DIODE SR108D			
D2202	8-719-101-08	DIODE SR108D			
D2203	8-719-101-08	DIODE SR108D			
D2204	8-719-101-08	DIODE SR108D			
D2205	8-719-101-08	DIODE SR108D			
D2206	8-719-812-41	DIODE TLR124			
D2207	8-719-812-42	DIODE TLY124			
D2208	8-719-812-43	DIODE TLG124			
		IC			
IC2201	8-759-619-03	IC M51903L			
		RESISTOR			
R2200	1-246-497-00	CARBON	10K	5% 1/4W	
R2201	1-246-469-00	CARBON	680	5% 1/4W	
R2202	1-246-469-00	CARBON	680	5% 1/4W	
R2203	1-246-469-00	CARBON	680	5% 1/4W	
R2204	1-246-469-00	CARBON	680	5% 1/4W	
R2205	1-246-469-00	CARBON	680	5% 1/4W	
R2206	1-246-449-00	CARBON	100	5% 1/4W	
R2207	1-246-485-00	CARBON	3.3K	5% 1/4W	
		SWITCH			
S2201	1-552-656-00	SWITCH, SLIDE			
S2202	1-552-656-00	SWITCH, SLIDE			
S2203	1-552-774-00	SWITCH, PUSH			
S2204	1-552-774-00	SWITCH, PUSH			
S2205	1-552-774-00	SWITCH, PUSH			
S2206	1-552-437-00	SWITCH, LEVER			

Ref.No	Part No	Description			Remark
	♦:1-603-229-00	M BOARD			E-153
	1-519-154-00	LAMP, NEON			
	♦:4-338-114-00	HOLDER, NEON LAMP			
		SWITCH			
S2251	1-553-437-00	SWITCH, PUSH (TUNING) (14 KEY)			
**********					
	♦:A-1306-100-A	MB BOARD, COMPLETE			E-157
	♦:1-555-349-00	CONNECTOR, MINIATURE 1P			
	♦:4-334-331-00	LID, BOTTOM, SHIELD CASE			
	♦:4-334-332-00	CASE (MAIN), SHIELD			
	♦:4-334-333-00	LID, UPPER, SHIELD CASE			
		CAPACITOR			
C012	1-101-006-00	CERAMIC	0.047MF		50V
C031	1-123-355-00	ELECT	4.7MF	20%	50V
C032	1-102-123-00	CERAMIC	0.0033MF	10%	50V
C033	1-123-355-00	ELECT	4.7MF	20%	50V
C034	1-101-880-00	CERAMIC	47PF	5%	50V
C035	1-108-638-00	MYLAR	0.1MF	10%	100V
C036	1-102-971-00	CERAMIC	82PF	5%	50V
C037	1-101-006-00	CERAMIC	0.047MF		50V
C038	1-130-020-00	FILM	0.0015MF	5%	50V
C039	1-130-018-00	FILM	0.001MF	5%	50V
C040	1-130-018-00	FILM	0.001MF	5%	50V
C041	1-102-973-00	CERAMIC	100PF	5%	50V
C042	1-101-884-00	CERAMIC	56PF	5%	50V
C044	1-108-642-11	MYLAR	0.22MF	10%	100V
C046	1-123-355-00	ELECT	4.7MF	20%	50V
C047	1-102-973-00	CERAMIC	100PF	5%	50V
C048	1-102-129-00	CERAMIC	0.01MF	10%	50V
C049	1-123-318-00	ELECT	33MF	20%	16V
C050	1-123-320-00	ELECT	100MF	20%	16V
C051	1-123-316-00	ELECT	10MF	20%	16V
C052	1-108-692-11	MYLAR	0.01MF	10%	200V
C054	1-108-692-11	MYLAR	0.01MF	10%	200V
C056	1-108-692-11	MYLAR	0.01MF	10%	200V
C057	1-123-355-00	ELECT	4.7MF	20%	50V
C058	1-102-980-00	CERAMIC	270PF	5%	50V
C060	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C061	1-108-626-11	MYLAR	0.01MF	10%	100V
C062	1-123-316-00	ELECT	10MF	20%	16V
C063	1-108-634-11	MYLAR	0.047MF	10%	100V
C099	1-123-252-00	ELECT	1MF		160V
		DIODE			
D030	8-719-815-55	DIODE 1S1555			
D033	8-719-815-55	DIODE 1S1555			
D034	8-719-815-55	DIODE 1S1555			
D035	8-719-815-55	DIODE 1S1555			
D038	8-719-815-55	DIODE 1S1555			

NOTE:

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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : μH

MB

Ref.No	Part No	Description	Remark
D039	8-719-191-07	DIODE RD9.1E	
D041	8-719-168-07	DIODE RD6.8E-B	
D042	8-719-815-55	DIODE 1S1555	
D043	8-719-815-55	DIODE 1S1555	
		IC	
IC031	8-759-157-40	IC UPC574J	
IC032	8-757-600-00	IC CX-760	
IC033	8-758-040-00	IC CX-804	
IC034	=>8-757-611-00	IC CX-761A	
		COIL	
L031	1-408-247-00	MICRO INDUCTOR 33MMH	
L032	1-409-193-00	COIL 3.58MHZ TRAP	
L033	1-407-705-11	MICRO INDUCTOR 100UH	
L035	1-407-705-11	MICRO INDUCTOR 100UH	
L036	1-407-701-11	MICRO INDUCTOR 47UH	
		CONNECTOR	
MB3	♦:1-560-127-00	PLUG, CONNECTOR (2.5MM) 7P	
MB11	♦:1-508-784-00	1P PLUG	
		TRANSISTOR	
Q031	8-729-663-47	TRANSISTOR 2SC1364	
Q032	8-729-663-47	TRANSISTOR 2SC1364	
Q033	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q034	8-729-663-47	TRANSISTOR 2SC1364	
Q035	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q036	8-729-139-04	TRANSISTOR 2N3904	
Q038	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q039	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q040	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q041	8-729-663-47	TRANSISTOR 2SC1364	
Q042	8-729-663-47	TRANSISTOR 2SC1364	
Q043	8-729-663-47	TRANSISTOR 2SC1364	
Q044	8-729-663-47	TRANSISTOR 2SC1364	
Q045	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q046	8-729-663-47	TRANSISTOR 2SC1364	
		RESISTOR	
R031	1-246-504-00	CARBON 20K 5% 1/4W	
R032	1-246-487-00	CARBON 3.9K 5% 1/4W	
R033	1-246-473-00	CARBON 1K 5% 1/4W	
R034	1-246-479-00	CARBON 1.8K 5% 1/4W	
R035	1-246-459-00	CARBON 270 5% 1/4W	
R036	1-246-497-00	CARBON 10K 5% 1/4W	
R037	1-246-497-00	CARBON 10K 5% 1/4W	
R038	1-246-497-00	CARBON 10K 5% 1/4W	
R039	1-246-481-00	CARBON 2.2K 5% 1/4W	
R040	1-246-473-00	CARBON 1K 5% 1/4W	
R041	1-246-497-00	CARBON 10K 5% 1/4W	
R042	1-246-485-00	CARBON 3.3K 5% 1/4W	
R043	1-246-497-00	CARBON 10K 5% 1/4W	
R044	1-246-521-00	CARBON 100K 5% 1/4W	

Ref.No	Part No	Description				Remark
R045	1-246-533-00	CARBON	330K	5%	1/4W	
R046	1-246-509-00	CARBON	33K	5%	1/4W	
R047	1-246-497-00	CARBON	10K	5%	1/4W	
R048	1-246-505-00	CARBON	22K	5%	1/4W	
R049	1-246-497-00	CARBON	10K	5%	1/4W	
R050	1-246-497-00	CARBON	10K	5%	1/4W	
R051	1-206-696-00	METAL	22K	5%	2W	F
R053	1-246-509-00	CARBON	33K	5%	1/4W	
R057	1-246-535-00	CARBON	390K	5%	1/4W	
R058	1-246-507-00	CARBON	27K	5%	1/4W	
R059	1-246-449-00	CARBON	100	5%	1/4W	
R060	1-246-489-00	CARBON	4.7K	5%	1/4W	
R061	1-246-489-00	CARBON	4.7K	5%	1/4W	
R062	1-246-505-00	CARBON	22K	5%	1/4W	
R063	1-246-489-00	CARBON	4.7K	5%	1/4W	
R064	1-246-521-00	CARBON	100K	5%	1/4W	
R065	1-246-521-00	CARBON	100K	5%	1/4W	
R066	1-246-505-00	CARBON	22K	5%	1/4W	
R067	1-246-481-00	CARBON	2.2K	5%	1/4W	
R068	1-246-473-00	CARBON	1K	5%	1/4W	
R069	1-246-481-00	CARBON	2.2K	5%	1/4W	
R070	1-246-497-00	CARBON	10K	5%	1/4W	
R071	1-246-505-00	CARBON	22K	5%	1/4W	
R072	1-246-497-00	CARBON	10K	5%	1/4W	
R073	1-244-873-00	CARBON	1K	5%	1/2W	
R074	1-244-929-00	CARBON	220K	5%	1/2W	
R075	1-246-497-00	CARBON	10K	5%	1/4W	
R076	1-246-473-00	CARBON	1K	5%	1/4W	
R077	1-246-497-00	CARBON	10K	5%	1/4W	
R078	1-246-497-00	CARBON	10K	5%	1/4W	
R079	1-246-497-00	CARBON	10K	5%	1/4W	
R080	1-246-497-00	CARBON	10K	5%	1/4W	
R081	1-246-497-00	CARBON	10K	5%	1/4W	
R082	1-246-473-00	CARBON	1K	5%	1/4W	
R083	1-246-519-00	CARBON	82K	5%	1/4W	
R084	1-246-497-00	CARBON	10K	5%	1/4W	
R085	1-206-700-00	METAL	33K	5%	2W	F
R086	1-244-909-00	CARBON	33K	5%	1/2W	
R087	1-246-529-00	CARBON	220K	5%	1/4W	
R088	1-246-473-00	CARBON	1K	5%	1/4W	
R089	1-246-473-00	CARBON	1K	5%	1/4W	
R090	1-246-441-00	CARBON	47	5%	1/4W	
R091	1-246-513-00	CARBON	47K	5%	1/4W	
R092	1-246-499-00	CARBON	12K	5%	1/4W	
R093	1-246-515-00	CARBON	56K	5%	1/4W	
R094	1-246-507-00	CARBON	27K	5%	1/4W	
R095	1-246-519-00	CARBON	82K	5%	1/4W	
R096	1-246-497-00	CARBON	10K	5%	1/4W	
R097	1-246-513-00	CARBON	47K	5%	1/4W	
R098	1-246-473-00	CARBON	1K	5%	1/4W	
R099	1-202-667-00	COMPSITION	8.2M	5%	1/2W	
R141	1-246-501-00	CARBON	15K	5%	1/4W	
R142	1-246-521-00	CARBON	100K	5%	1/4W	

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RESISTORS
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COILS
- MMH : mH, UH : μH

SCC-316A-A/SCC-317A-A KP-5020/7220

MB **G**

Ref.No	Part No	Description				Remark
R143	1-246-473-00	CARBON	1K	5%	1/4W	
R144	1-246-505-00	CARBON	22K	5%	1/4W	
		POST PIN				
TP53	♦:1-536-354-00	POST PIN				
**********						
	♦:A-1311-052-A	G BOARD, COMPLETE				E-106
	⚠.1-453-088-00	DC BLOCK, HIGH-VOLTAGE				E-105
	1-533-146-00	HOLDER, FUSE				
	♦:1-555-024-00	CONNECTOR ASSY, MINIATURE 3P				
	♦:1-555-024-00	CONNECTOR ASSY, MINIATURE 3P				
	♦:1-555-192-00	CONNECTOR ASSY (LARGE) 4P				
		CAPACITOR				
C501	1-123-352-00	ELECT	1MF	20%	50V	
C502	1-123-352-00	ELECT	1MF	20%	50V	
C503	1-108-625-00	MYLAR	0.0082MF	10%	100V	
C504	1-108-638-00	MYLAR	0.1MF	10%	100V	
C505	1-108-633-11	MYLAR	0.039MF	10%	100V	
C506	1-130-203-00	FILM	0.01MF	5%	50V	
C507	1-108-622-11	MYLAR	0.0047MF	10%	100V	
C508	1-123-351-00	ELECT	0.47MF	20%	50V	
C509	1-123-316-00	ELECT	10MF	20%	16V	
C510	1-123-321-00	ELECT	220MF	20%	16V	
C511	1-102-973-00	CERAMIC	100PF	5%	50V	
C512	1-123-351-00	ELECT	0.47MF	20%	50V	
C513	1-123-354-00	ELECT	3.3MF	20%	50V	
C514	1-102-157-00	CERAMIC	560PF	10%	500V	
C515	1-121-999-00	ELECT	10MF		160V	
C516	1-102-973-00	CERAMIC	100PF	5%	50V	
C517	1-102-157-00	CERAMIC	560PF	10%	500V	
C518	1-123-351-00	ELECT	0.47MF	20%	50V	
C519	1-108-622-11	MYLAR	0.0047MF	10%	100V	
C520	1-123-358-00	ELECT	33MF	20%	50V	
C521	1-131-361-00	TANTALUM	2.2MF	20%	20V	
C522	1-131-197-00	TANTALUM	3.3MF	10%	16V	
C523	1-108-632-11	MYLAR	0.033MF	10%	100V	
C524	1-108-631-11	MYLAR	0.027MF	10%	100V	
C525	1-123-320-00	ELECT	100MF	20%	16V	
C526	1-108-616-11	MYLAR	0.0015MF	10%	100V	
C530	1-108-618-11	MYLAR	0.0022MF	10%	100V	
C531	1-123-316-00	ELECT	10MF	20%	16V	
C532	1-123-116-00	ELECT	1MF		160V	
C533	1-108-697-11	MYLAR	0.027MF	10%	200V	
C534	1-123-336-00	ELECT	470MF	20%	25V	
C535	1-123-336-00	ELECT	470MF	20%	25V	
C536	1-121-757-00	ELECT	33MF		160V	
C537	1-123-354-00	ELECT	3.3MF	20%	50V	
C538	1-123-024-51	ELECT	33MF		160V	
C539	1-121-999-00	ELECT	10MF		160V	
C540	1-123-022-00	ELECT	22MF		350V	

Ref.No	Part No	Description				Remark
C541	1-129-918-00	FILM	0.0018MF	5%	1.5KV	
C542	1-102-441-00	CERAMIC	470PF	20%	2KV	
C550	1-123-353-00	ELECT	2.2MF	20%	50V	
C801	1-108-688-11	MYLAR	0.0047MF	10%	200V	
C802	1-123-331-00	ELECT	33MF	20%	25V	
C803	1-123-334-00	ELECT	220MF	20%	25V	
C804	1-123-321-00	ELECT	220MF	20%	16V	
C805	1-125-195-00	ELECT	4.7MF		100V	
C806	⚠.1-108-546-00	MYLAR	1.5MF	10%	400V	
C807	⚠.1-129-936-00	FILM	0.0075MF	5%	1.5KV	
C808	1-108-546-00	MYLAR	1.5MF	10%	400V	
C809	1-108-646-00	MYLAR	0.47MF	10%	100V	
C810	1-108-907-00	MYLAR	2.2MF	10%	200V	
C811	1-123-252-00	ELECT	1MF		160V	
C812	1-108-688-11	MYLAR	0.0047MF	10%	200V	
C813	1-123-252-00	ELECT	1MF		160V	
C814	1-123-024-51	ELECT	33MF		160V	
		DIODE				
D501	8-719-815-55	DIODE 1S1555				
D502	8-719-156-23	DIODE RD5.6EZ7S				
D503	=>8-719-930-12	DIODE EQB01-12Z				
D505	=>8-719-930-12	DIODE EQB01-12Z				
D506	=>8-719-320-11	DIODE HF-1A				
D507	=>8-719-200-02	DIODE 10E2				
D508	8-719-303-41	DIODE S-34				
D509	8-719-303-41	DIODE S-34				
D510	8-719-303-41	DIODE S-34				
D511	8-719-900-95	DIODE VO9G				
D512	=>8-719-200-02	DIODE 10E2				
D513	=>8-719-305-15	DIODE GH3F				
D514	=>8-719-305-15	DIODE GH3F				
D515	8-719-320-11	DIODE HF-1A				
D801	8-719-936-09	DIODE EQB01-09				
D802	=>8-719-200-02	DIODE 10E2				
D803	=>8-719-200-02	DIODE 10E2				
D804	8-719-815-55	DIODE 1S1555				
D805	8-719-815-55	DIODE 1S1555				
D806	=>8-719-305-15	DIODE GH3F				
D807	=>8-719-931-10	DIODE EQB01-10				
D808	=>8-719-200-02	DIODE 10E2				
D809	=>8-719-200-02	DIODE 10E2				
D810	=>8-719-200-02	DIODE 10E2				
		FUSE				
F501	⚠.1-532-555-00	FUSE, GLASS TUBE				
F801	⚠.1-532-555-00	FUSE, GLASS TUBE				
		CONNECTOR				
G1	♦:1-506-349-21	3P PLUG (L)				
G2	♦:1-508-766-00	4P PLUG (M)				
G3	♦:1-508-766-00	4P PLUG (M)				
G4	♦:1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P				

Ref.No	Part No	Description	Remark
G5	♦:1-506-347-21	4P PLUG	
G6	♦:1-506-348-21	6P PLUG	
G7	♦:1-506-355-21	PLUG, 5P	
G8	♦:1-508-786-00	2P PLUG (M)	
G9	♦:1-508-784-00	1P PLUG	
G10	♦:1-508-765-00	3P PLUG (M)	
G11	♦:1-508-765-00	3P PLUG (M)	
G12	♦:1-508-765-00	3P PLUG (M)	
G13	♦:1-508-784-00	1P PLUG	
G14	♦:1-506-349-21	3P PLUG (L)	
G15	♦:1-506-349-21	3P PLUG (L)	
G16	♦:1-508-765-00	3P PLUG (M)	
G17	♦:1-506-349-21	3P PLUG (L)	
G18	♦:1-506-347-21	4P PLUG	
G19	♦:1-506-371-00	2P PLUG (L)	
G21	♦:1-506-349-21	3P PLUG (L)	
G22	♦:1-508-765-00	3P PLUG (M)	
		IC	
IC501	8-759-105-57	IC CX-557	
		COIL	
L501	1-407-687-11	MICRO INDUCTOR 3.3UH	
L502	1-407-709-00	MICRO INDUCTOR 220UH	
L505	1-459-104-00	COIL,DUST CORE	
L506	1-407-705-11	MICRO INDUCTOR 100UH	
L507	1-407-705-11	MICRO INDUCTOR 100UH	
L801	1-407-720-00	CHOKE COIL	
L802	1-407-720-00	CHOKE COIL	
		NEON LAMP	
NL801	1-519-108-XX	LAMP, NEON ASSY	
		TRANSISTOR	
Q501	8-729-213-11	TRANSISTOR 2SC2230A	
Q502	8-729-213-11	TRANSISTOR 2SC2230A	
Q503	8-729-663-47	TRANSISTOR 2SC1364	
Q504	8-729-663-47	TRANSISTOR 2SC1364	
Q505	=>8-765-170-01	TRANSISTOR 2SC1962	
Q801	8-729-663-47	TRANSISTOR 2SC1364	
Q802	8-729-663-47	TRANSISTOR 2SC1364	
Q803	=>8-729-612-77	TRANSISTOR 2SA-1027R	
Q804	8-729-663-47	TRANSISTOR 2SC1364	
Q805	8-729-663-47	TRANSISTOR 2SC1364	
Q806	8-729-309-06	TRANSISTOR 2SC1890A	
Q807	8-729-213-11	TRANSISTOR 2SC2230A	
Q808	8-729-213-11	TRANSISTOR 2SC2230A	
		RESISTOR	
R501	1-246-467-00	CARBON 560 5% 1/4W	
R502	1-246-541-00	CARBON 680K 5% 1/4W	
R503	1-246-459-00	CARBON 270 5% 1/4W	

G

Ref.No	Part No	Description				Remark
R504	1-246-523-00	CARBON	120K	5%	1/4W	
R505	1-246-511-00	CARBON	39K	5%	1/4W	
R506	1-246-483-00	CARBON	2.7K	5%	1/4W	
R507	1-246-501-00	CARBON	15K	5%	1/4W	
R508	1-246-481-00	CARBON	2.2K	5%	1/4W	
R509	1-246-489-00	CARBON	4.7K	5%	1/4W	
R510	1-246-481-00	CARBON	2.2K	5%	1/4W	
R511	1-246-449-00	CARBON	100	5%	1/4W	
R512	1-246-465-00	CARBON	470	5%	1/4W	
R513	1-247-014-11	CARBON	1.8K	5%	1/4W	F
R514	1-247-014-11	CARBON	1.8K	5%	1/4W	F
R515	1-246-465-00	CARBON	470	5%	1/4W	
R516	1-246-449-00	CARBON	100	5%	1/4W	
R517	1-246-493-00	CARBON	6.8K	5%	1/4W	
R518	1-246-465-00	CARBON	470	5%	1/4W	
R519	1-246-491-00	CARBON	5.6K	5%	1/4W	
R520	1-246-453-00	CARBON	150	5%	1/4W	
R521	1-246-489-00	CARBON	4.7K	5%	1/4W	
R522	1-246-457-00	CARBON	220	5%	1/4W	
R523	1-214-110-00	METAL	120	1%	1/4W	
R524	1-214-116-00	METAL	220	1%	1/4W	
R525	1-214-162-00	METAL	18K	1%	1/4W	
R526	1-246-449-00	CARBON	100	5%	1/4W	
R527	1-246-493-00	CARBON	6.8K	5%	1/4W	
R528	1-206-732-00	METAL	2K	5%	3W	F
R529	1-206-732-00	METAL	2K	5%	3W	F
R530	1-206-732-00	METAL	2K	5%	3W	F
R531	1-211-626-00	CARBON	330	5%	1/2W	F
R532	1-206-731-00	METAL	1.8K	5%	3W	F
R533	1-206-731-00	METAL	1.8K	5%	3W	F
R534	1-211-626-00	CARBON	330	5%	1/2W	F
R535	1-246-509-00	CARBON	33K	5%	1/4W	
R536	1-246-441-00	CARBON	47	5%	1/4W	
R537	1-246-513-00	CARBON	47K	5%	1/4W	
R538	1-206-439-00	METAL	1	5%	2W	F
R539	1-206-439-00	METAL	1	5%	2W	F
R540	1-206-529-00	METAL	56	5%	3W	F
R541	1-212-368-00	METAL	4.7	5%	1W	F
R542	1-246-457-00	CARBON	220	5%	1/4W	
R543	1-247-034-00	CARBON	220	5%	1/8W	F
R544	1-206-680-00	METAL	4.7K	5%	2W	F
R545	1-206-439-00	METAL	1	5%	2W	F
R546	1-206-439-00	METAL	1	5%	2W	F
R547	1-206-439-00	METAL	1	5%	2W	F
R548	1-206-692-00	METAL	15K	5%	2W	F
R549	1-206-457-00	METAL	5.6	5%	2W	F
R550	1-213-146-00	METAL	1.8K	5%	1W	F
R801	1-247-040-00	CARBON	1K	5%	1/8W	F
R802	1-214-180-00	METAL	100K	1%	1/4W	
R803	⚠.	CARBON			1/4W	
R804	⚠.	CARBON			1/4W	
R805	1-246-497-00	CARBON	10K	5%	1/4W	
R806	1-206-700-00	METAL	33K	5%	2W	F

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : μH

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COILS
- MMH : mH, UH : μH

G C DA

Ref.No	Part No	Description				Remark
R807	1-246-513-00	CARBON	47K	5%	1/4W	
R808	1-246-513-00	CARBON	47K	5%	1/4W	
R809	1-246-493-00	CARBON	6.8K	5%	1/4W	
R810	1-246-497-00	CARBON	10K	5%	1/4W	
R811	1-246-497-00	CARBON	10K	5%	1/4W	
R812	1-246-497-00	CARBON	10K	5%	1/4W	
R813	1-247-040-00	CARBON	1K	5%	1/8W	F
R814	1-214-180-00	METAL	100K	1%	1/4W	
■R815 ⚠.		CARBON			1/4W	
■R816 ⚠.		CARBON			1/4W	
R817	1-244-933-00	CARBON	330K	5%	1/2W	
R818	1-211-651-00	CARBON	3.6K	5%	1/2W	F
R819	1-246-989-11	CARBON	82	5%	1/8W	F
R820	1-246-994-00	CARBON	680	5%	1/8W	F
.821	1-206-745-00	METAL	6.8K	5%	3W	F
R822	1-244-899-00	CARBON	12K	5%	1/2W	
R823	1-212-698-00	METAL	68K	1%	1/2W	
R825	1-214-166-00	METAL	27K	1%	1/4W	
R826	1-214-174-00	METAL	56K	1%	1/4W	
R827	1-246-473-00	CARBON	1K	5%	1/4W	

VARIABLE RESISTOR

RV501	1-226-819-00	RES, ADJ, METAL GLAZE 1K

RESISTOR

T501	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T502	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE
T503	1-439-264-00	LOT (FERRITE TRANSFORMER)
T801 ⚠	1-421-409-00	COIL, FERRITE

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♦:A-1330-277-A C BOARD, COMPLETE E-55

♦:1-508-765-00 3P PLUG (M)
♦:1-508-766-00 4P PLUG (M)
♦:1-508-784-00 1P PLUG
♦:1-508-786-00 2P PLUG (M)
1-526-644-00 SOCKET, CRT

♦:1-587-474-00 PC BOARD, C
♦:4-324-413-00 HEAT SINK, B

CAPACITOR

C701	1-123-028-00	ELECT	2.2MF		350V
C702	1-121-963-00	ELECT	33MF	20%	25V
C703	1-102-267-00	CERAMIC	0.0068MF		500V
C704	1-102-155-00	CERAMIC	330PF	20%	2KV
C706	1-102-155-00	CERAMIC	330PF	20%	2KV

COIL

L701	1-407-492-00	MICRO INDUCTOR 1MMH
L702	1-407-364-00	COIL, SPOOK CHOKE
L703	1-407-364-00	COIL, SPOOK CHOKE

Ref.No	Part No	Description				Remark

DISCHARGE TUBE

NL701	1-519-013-13	DISCHARGE TUBE

TRANSISTOR

Q701	8-729-372-31	TRANSISTOR 2SC1723

RESISTOR

R701	1-202-615-00	COMPSITION	56K	5%	1/2W	
R702	1-202-631-00	COMPSITION	270K	5%	1/2W	
R703	1-244-921-00	CARBON	100K	5%	1/2W	
R704	1-244-923-00	CARBON	120K	5%	1/2W	
R705	1-246-503-00	CARBON	18K	5%	1/4W	
R706	1-206-753-00	METAL	15K	5%	3W	F
R707	1-246-449-00	CARBON	100	5%	1/4W	
R708	1-202-585-00	COMPSITION	3.3K	5%	1/2W	
R709	1-202-629-00	COMPSITION	220K	5%	1/2W	
R710	1-202-573-00	COMPSITION	1K	5%	1/2W	
R711	1-202-639-00	COMPSITION	560K	5%	1/2W	
R712	1-202-583-00	COMPSITION	2.7K	5%	1/2W	
R713	1-202-615-00	COMPSITION	56K	5%	1/2W	

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♦:A-1340-342-A DA BOARD, COMPLETE E-104

CAPACITOR

C5501	1-108-638-00	MYLAR	0.1MF	10%	100V
C5502♦	1-131-238-00	TANTALUM	10MF	10%	25V
C5503	1-108-638-00	MYLAR	0.1MF	10%	100V
C5504♦	1-131-238-00	TANTALUM	10MF	10%	25V
C5505♦	1-131-238-00	TANTALUM	10MF	10%	25V
C5506♦	1-131-238-00	TANTALUM	10MF	10%	25V
C5507	1-108-638-00	MYLAR	0.1MF	10%	100V
C5508	1-108-638-00	MYLAR	0.1MF	10%	100V
C5509♦	1-131-238-00	TANTALUM	10MF	10%	25V
C5510♦	1-131-238-00	TANTALUM	10MF	10%	25V
C5511	1-123-321-00	ELECT	220MF	20%	16V
C5512	1-123-252-00	ELECT	1MF		160V
C5513	1-123-321-00	ELECT	220MF	20%	16V
C5514	1-123-252-00	ELECT	1MF		160V
C5515	1-123-321-00	ELECT	220MF	20%	16V
C5516	1-123-252-00	ELECT	1MF		160V
C5517	1-123-320-00	ELECT	100MF	20%	16V
C5518	1-108-614-11	MYLAR	0.001MF	10%	100V
C5519	1-108-638-00	MYLAR	0.1MF	10%	100V
C5520	1-123-320-00	ELECT	100MF	20%	16V
C5521	1-123-318-00	ELECT	33MF	20%	16V
C5522	1-108-636-11	MYLAR	0.068MF	10%	100V
C5523	1-123-323-00	ELECT	470MF	20%	16V
C5524	1-123-323-00	ELECT	470MF	20%	16V
C5525	1-123-323-00	ELECT	470MF	20%	16V
C5526	1-123-320-00	ELECT	100MF	20%	16V

Ref.No	Part No	Description				Remark
C5527	1-123-321-00	ELECT	220MF	20%	16V	
C5528	1-108-618-11	MYLAR	0.0022MF	10%	100V	
C5529	1-123-320-00	ELECT	100MF	20%	16V	
C5530	1-123-320-00	ELECT	100MF	20%	16V	
C5531	1-108-634-11	MYLAR	0.047MF	10%	100V	
C5532	1-108-616-11	MYLAR	0.0015MF	10%	100V	
C5533	1-123-316-00	ELECT	10MF	20%	16V	
C5534	1-123-316-00	ELECT	10MF	20%	16V	
C5535	1-123-331-00	ELECT	33MF	20%	25V	
C5536	1-123-316-00	ELECT	10MF	20%	16V	
C5537	1-123-329-00	ELECT	10MF	20%	25V	
C5538	1-123-330-00	ELECT	22MF	20%	25V	
C5539	1-123-316-00	ELECT	10MF	20%	16V	
C5540	1-102-228-00	CERAMIC	470PF	10%	500V	
C5541	1-123-116-00	ELECT	1MF		160V	
C5542	1-108-632-11	MYLAR	0.033MF	10%	100V	
C5543	1-123-318-00	ELECT	33MF	20%	16V	
C5544	1-123-318-00	ELECT	33MF	20%	16V	
C5545	1-108-634-11	MYLAR	0.047MF	10%	100V	
C5546	1-108-614-11	MYLAR	0.001MF	10%	100V	
C5547	1-123-318-00	ELECT	33MF	20%	16V	
C5549	1-123-316-00	ELECT	10MF	20%	16V	
C5550	1-123-329-00	ELECT	10MF	20%	25V	
C5551	1-123-316-00	ELECT	10MF	20%	16V	
C5552	1-123-330-00	ELECT	22MF	20%	25V	
C5553	1-123-316-00	ELECT	10MF	20%	16V	
C5554	1-123-316-00	ELECT	10MF	20%	16V	
C5555	1-108-636-11	MYLAR	0.068MF	10%	100V	
C5556	1-123-318-00	ELECT	33MF	20%	16V	
C5557	1-123-316-00	ELECT	10MF	20%	16V	
C5558	1-123-316-00	ELECT	10MF	20%	16V	

DIODE

D5501=>8-719-931-05	DIODE EQB01-05
D5502=>8-719-931-05	DIODE EQB01-05
D5503=>8-719-930-12	DIODE EQB01-12Z

CONNECTOR

DA1	♦:1-508-767-00	5P PLUG
DA2	♦:1-508-766-00	4P PLUG (M)
DA3	♦:1-508-768-00	6P PLUG
DA4	♦:1-508-768-00	6P PLUG
DA5	♦:1-508-768-00	6P PLUG
DA6	♦:1-508-786-00	2P PLUG (M)
DA7	♦:1-506-355-21	PLUG, 5P
DA8	♦:1-508-784-00	1P PLUG
DA9	♦:1-508-765-00	3P PLUG (M)
DA10	♦:1-508-766-00	4P PLUG (M)
DA11	♦:1-508-766-00	4P PLUG (M)

COIL

L5501	1-407-705-11	MICRO INDUCTOR 100UH

Ref.No	Part No	Description				Remark
L5502	1-408-245-00	MICRO INDUCTOR 22MMH				

TRANSISTOR

Q5501=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5502=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5503=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5504=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5505=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5506	8-729-663-47	TRANSISTOR 2SC1364			
Q5507	8-729-663-47	TRANSISTOR 2SC1364			
Q5508=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5509	8-729-663-47	TRANSISTOR 2SC1364			
Q5510	8-729-663-47	TRANSISTOR 2SC1364			
Q5511=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5512=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5513	8-729-663-47	TRANSISTOR 2SC1364			
Q5514	8-729-663-47	TRANSISTOR 2SC1364			
Q5515=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5520=>8-761-510-06		TRANSISTOR 2SK58			
Q5521	8-729-663-47	TRANSISTOR 2SC1364			
Q5522	8-729-663-47	TRANSISTOR 2SC1364			
Q5523=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5524	8-729-663-47	TRANSISTOR 2SC1364			
Q5525	8-729-663-47	TRANSISTOR 2SC1364			
Q5526=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5527	8-729-663-47	TRANSISTOR 2SC1364			
Q5528	8-729-663-47	TRANSISTOR 2SC1364			
Q5529=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5530	8-729-663-47	TRANSISTOR 2SC1364			
Q5534=>8-761-510-06		TRANSISTOR 2SK58			
Q5535	8-729-663-47	TRANSISTOR 2SC1364			
Q5536	8-729-663-47	TRANSISTOR 2SC1364			
Q5537=>8-729-612-77		TRANSISTOR 2SA1027R			
Q5538	8-729-663-47	TRANSISTOR 2SC1364			
Q5539	8-729-663-47	TRANSISTOR 2SC1364			

RESISTOR

R5501	1-214-162-00	METAL	18K	1%	1/4W
R5502	1-214-162-00	METAL	18K	1%	1/4W
R5504	1-214-160-00	METAL	15K	1%	1/4W
R5505	1-214-160-00	METAL	15K	1%	1/4W
R5506	1-214-160-00	METAL	15K	1%	1/4W
R5507	1-214-160-00	METAL	15K	1%	1/4W
R5509	1-214-160-00	METAL	15K	1%	1/4W
R5510	1-214-152-00	METAL	6.8K	1%	1/4W
R5513	1-214-152-00	METAL	6.8K	1%	1/4W
R5514	1-214-160-00	METAL	15K	1%	1/4W
R5516	1-246-499-00	CARBON	12K	5%	1/4W
R5517	1-246-495-00	CARBON	8.2K	5%	1/4W
R5519	1-246-499-00	CARBON	12K	5%	1/4W
R5520	1-246-495-00	CARBON	8.2K	5%	1/4W
R5521	1-214-156-00	METAL	10K	1%	1/4W

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- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : μH

DA

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DA

Ref.No	Part No	Description				Remark
R5522	1-214-156-00	METAL	10K	1%	1/4W	
R5523	1-214-172-00	METAL	47K	1%	1/4W	
R5524	1-214-160-00	METAL	15K	1%	1/4W	
R5527	1-214-160-00	METAL	15K	1%	1/4W	
R5528	1-214-172-00	METAL	47K	1%	1/4W	
R5530	1-246-505-00	CARBON	22K	5%	1/4W	
R5533	1-246-505-00	CARBON	22K	5%	1/4W	
R5535	1-214-164-00	METAL	22K	1%	1/4W	
R5536	1-214-164-00	METAL	22K	1%	1/4W	
R5537	1-214-174-00	METAL	56K	1%	1/4W	
R5538	1-214-155-00	METAL	9.1K	1%	1/4W	
R5539	1-214-180-00	METAL	100K	1%	1/4W	
R5540	1-214-174-00	METAL	56K	1%	1/4W	
R5541	1-214-180-00	METAL	100K	1%	1/4W	
R5542	1-214-155-00	METAL	9.1K	1%	1/4W	
R5543	1-214-164-00	METAL	22K	1%	1/4W	
R5544	1-214-164-00	METAL	22K	1%	1/4W	
R5545	1-214-136-00	METAL	1.5K	1%	1/4W	
R5546	1-214-156-00	METAL	10K	1%	1/4W	
R5547	1-214-136-00	METAL	1.5K	1%	1/4W	
R5548	1-214-156-00	METAL	10K	1%	1/4W	
R5549	1-214-160-00	METAL	15K	1%	1/4W	
R5550	1-214-168-00	METAL	33K	1%	1/4W	
R5551	1-214-164-00	METAL	22K	1%	1/4W	
R5552	1-214-176-00	METAL	68K	1%	1/4W	
R5554	1-214-164-00	METAL	22K	1%	1/4W	
R5555	1-214-176-00	METAL	68K	1%	1/4W	
R5560	1-214-168-00	METAL	33K	1%	1/4W	
R5563	1-214-168-00	METAL	33K	1%	1/4W	
R5566	1-214-160-00	METAL	15K	1%	1/4W	
R5567	1-214-160-00	METAL	15K	1%	1/4W	
R5568	1-214-160-00	METAL	15K	1%	1/4W	
R5569	1-214-160-00	METAL	15K	1%	1/4W	
R5571	1-214-164-00	METAL	22K	1%	1/4W	
R5572	1-214-164-00	METAL	22K	1%	1/4W	
R5574	1-214-168-00	METAL	33K	1%	1/4W	
R5575	1-214-168-00	METAL	33K	1%	1/4W	
R5577	1-214-168-00	METAL	33K	1%	1/4W	
R5578	1-214-168-00	METAL	33K	1%	1/4W	
R5580	1-214-164-00	METAL	22K	1%	1/4W	
R5583	1-214-164-00	METAL	22K	1%	1/4W	
R5585	1-214-168-00	METAL	33K	1%	1/4W	
R5586	1-214-168-00	METAL	33K	1%	1/4W	
R5587	1-214-174-00	METAL	56K	1%	1/4W	
R5588	1-214-174-00	METAL	56K	1%	1/4W	
R5589	1-214-174-00	METAL	56K	1%	1/4W	
R5590	1-214-174-00	METAL	56K	1%	1/4W	
R5591	1-214-136-00	METAL	1.5K	1%	1/4W	
R5592	1-214-180-00	METAL	100K	1%	1/4W	
R5593	1-214-156-00	METAL	10K	1%	1/4W	
R5594	1-214-160-00	METAL	15K	1%	1/4W	
R5595	1-214-162-00	METAL	18K	1%	1/4W	
R5596	1-214-160-00	METAL	15K	1%	1/4W	

Ref.No	Part No	Description				Remark
R5597	1-213-135-00	METAL	220	5%	1W	F
R5598	1-213-135-00	METAL	220	5%	1W	F
R5600	1-214-158-00	METAL	12K	1%	1/4W	
R5601	1-246-507-00	CARBON	27K	5%	1/4W	
R5604	1-214-162-00	METAL	18K	1%	1/4W	
R5605	1-214-180-00	METAL	100K	1%	1/4W	
R5608	1-246-509-00	CARBON	33K	5%	1/4W	
R5609	1-246-509-00	CARBON	33K	5%	1/4W	
R5610	1-246-483-00	CARBON	2.7K	5%	1/4W	
R5611	1-246-471-00	CARBON	820	5%	1/4W	
R5612	1-246-491-00	CARBON	5.6K	5%	1/4W	
R5613	1-246-483-00	CARBON	2.7K	5%	1/4W	
R5614	1-246-471-00	CARBON	820	5%	1/4W	
R5615	1-246-491-00	CARBON	5.6K	5%	1/4W	
R5616	1-246-483-00	CARBON	2.7K	5%	1/4W	
R5617	1-246-471-00	CARBON	820	5%	1/4W	
R5618	1-246-491-00	CARBON	5.6K	5%	1/4W	
R5619	1-246-509-00	CARBON	33K	5%	1/4W	
R5620	1-214-164-00	METAL	22K	1%	1/4W	
R5621	1-214-164-00	METAL	22K	1%	1/4W	
R5622	1-213-141-00	METAL	680	5%	1W	F
R5623	1-246-485-00	CARBON	3.3K	5%	1/4W	
R5624	1-246-485-00	CARBON	3.3K	5%	1/4W	
R5625	1-213-141-00	METAL	680	5%	1W	F
R5627	1-246-491-00	CARBON	5.6K	5%	1/4W	
R5628	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5629	1-246-459-00	CARBON	270	5%	1/4W	
R5630	1-214-170-00	METAL	39K	1%	1/4W	
R5631	1-214-170-00	METAL	39K	1%	1/4W	
R5632	1-213-140-00	METAL	560	5%	1W	F
R5633	1-213-140-00	METAL	560	5%	1W	F
R5634	1-246-485-00	CARBON	3.3K	5%	1/4W	
R5635	1-246-485-00	CARBON	3.3K	5%	1/4W	
R5636	1-246-479-00	CARBON	1.8K	5%	1/4W	
R5637	1-246-509-00	CARBON	33K	5%	1/4W	
R5638	1-246-515-00	CARBON	56K	5%	1/4W	
R5639	1-213-135-00	METAL	220	5%	1W	F
R5640	1-246-467-00	CARBON	560	5%	1/4W	
R5641	1-214-174-00	METAL	56K	1%	1/4W	
R5642	1-214-175-00	METAL	62K	1%	1/4W	
R5643	1-214-175-00	METAL	62K	1%	1/4W	
R5644	1-213-141-00	METAL	680	5%	1W	F
R5645	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5646	1-213-141-00	METAL	680	5%	1W	F
R5647	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5648	1-246-491-00	CARBON	5.6K	5%	1/4W	
R5649	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5650	1-246-499-00	CARBON	12K	5%	1/4W	
R5651	1-213-143-00	METAL	1K	5%	1W	F
R5652	1-213-143-00	METAL	1K	5%	1W	F
R5653	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5654	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5655	1-246-457-00	CARBON	220	5%	1/4W	

NOTE:

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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : μH

DA

Ref.No	Part No	Description				Remark
R5656	1-246-501-00	CARBON	15K	5%	1/4W	
R5657	1-246-501-00	CARBON	15K	5%	1/4W	
R5658	1-246-497-00	CARBON	10K	5%	1/4W	
R5659	1-246-521-00	CARBON	100K	5%	1/4W	
R5660	1-246-521-00	CARBON	100K	5%	1/4W	
R5661	1-246-521-00	CARBON	100K	5%	1/4W	
R5662	1-246-521-00	CARBON	100K	5%	1/4W	
R5663	1-246-501-00	CARBON	15K	5%	1/4W	
R5664	1-246-525-00	CARBON	150K	5%	1/4W	
R5665	1-246-523-00	CARBON	120K	5%	1/4W	
R5666	1-246-495-00	CARBON	8.2K	5%	1/4W	
R5667	1-246-511-00	CARBON	39K	5%	1/4W	
R5668	1-246-505-00	CARBON	22K	5%	1/4W	
R5669	1-246-505-00	CARBON	22K	5%	1/4W	
R5670	1-213-141-00	METAL	680	5%	1W	F
R5671	1-213-141-00	METAL	680	5%	1W	F
R5672	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5673	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5674	1-246-525-00	CARBON	150K	5%	1/4W	
R5675	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5676	1-213-143-00	METAL	1K	5%	1W	F
R5677	1-213-143-00	METAL	1K	5%	1W	F
R5678	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5679	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5680	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5681	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5682	1-246-497-00	CARBON	10K	5%	1/4W	
R5683	1-213-143-00	METAL	1K	5%	1W	F
R5684	1-213-143-00	METAL	1K	5%	1W	F
R5685	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5686	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5687	1-246-457-00	CARBON	220	5%	1/4W	
R5688	1-246-501-00	CARBON	15K	5%	1/4W	
R5689	1-246-501-00	CARBON	15K	5%	1/4W	
R5691	1-246-465-00	CARBON	470	5%	1/4W	
R5692	1-246-449-00	CARBON	100	5%	1/4W	
R5693	1-246-521-00	CARBON	100K	5%	1/4W	
R5694	1-246-521-00	CARBON	100K	5%	1/4W	
R5695	1-246-521-00	CARBON	100K	5%	1/4W	
R5696	1-246-521-00	CARBON	100K	5%	1/4W	
R5697	1-246-501-00	CARBON	15K	5%	1/4W	
R5698	1-246-525-00	CARBON	150K	5%	1/4W	
R5699	1-246-520-00	CARBON	91K	5%	1/4W	
R5700	1-246-494-00	CARBON	7.5K	5%	1/4W	
R5701	1-246-509-00	CARBON	33K	5%	1/4W	
R5702	1-246-449-00	CARBON	100	5%	1/4W	
R5703	1-246-465-00	CARBON	470	5%	1/4W	
R5704	1-246-505-00	CARBON	22K	5%	1/4W	
R5705	1-246-505-00	CARBON	22K	5%	1/4W	
R5706	1-213-141-00	METAL	680	5%	1W	F
R5707	1-213-141-00	METAL	680	5%	1W	F
R5708	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5709	1-246-501-00	CARBON	15K	5%	1/4W	

Ref.No	Part No	Description				Remark
R5710	1-246-489-00	CARBON	4.7K	5%	1/4W	
R5711	1-246-491-00	CARBON	5.6K	5%	1/4W	
R5712	1-214-156-00	METAL	10K	1%	1/4W	
R5713	1-246-499-00	CARBON	12K	5%	1/4W	

VARIABLE RESISTOR

RV5501	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5502	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5503	1-226-922-00	RES, ADJ, CARBON	22K
RV5504	1-226-922-00	RES, ADJ, CARBON	22K
RV5505	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5506	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5507	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5508	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5509	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5510	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5511	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5512	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5513	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5514	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5516	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5517	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5518	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5519	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5520	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5521	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5522	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5523	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5524	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5525	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5526	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5527	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5528	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5529	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5530	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5531	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5532	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5533	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5534	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5535	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5536	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5537	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5538	1-226-922-00	RES, ADJ, CARBON	22K
RV5539	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5540	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5541	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5542	1-226-921-00	RES, ADJ, CARBON	4.7K
RV5543	1-226-923-00	RES, ADJ, CARBON	47K
RV5544	1-226-923-00	RES, ADJ, CARBON	47K

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DB

Ref.No	Part No	Description			Remark
♦	A-1340-343-A	DB BOARD, COMPLETE			E-102
	4-347-706-01	HEAT SINK (TR)			
♦	4-821-501-00	HEAT SINK			
		CAPACITOR			
C5301	1-108-626-11	MYLAR	0.01MF	10% 100V	
C5302	1-108-680-11	MYLAR	0.001MF	10% 200V	
C5303	1-108-680-11	MYLAR	0.001MF	10% 200V	
C5304	1-108-700-11	MYLAR	0.047MF	10% 200V	
C5305	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5306	1-102-820-00	CERAMIC	330PF	5% 50V	
C5308	1-123-328-00	ELECT	4.7MF	20% 25V	
C5309	1-121-246-00	ELECT	4.7MF	160V	
C5310	1-108-618-11	MYLAR	0.0022MF	10% 100V	
C5311	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5312	1-102-947-00	CERAMIC	10PF	5% 50V	
C5313	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5314	1-108-688-11	MYLAR	0.0047MF	10% 200V	
C5315	1-123-116-00	ELECT	1MF	160V	
C5316	1-123-323-00	ELECT	470MF	20% 16V	
C5317	1-130-121-00	FILM	0.0045MF	3% 1.5KV	
C5318	1-130-157-00	FILM	1MF	5% 200V	
C5319	1-102-978-00	CERAMIC	220PF	5% 50V	
C5320	1-108-626-11	MYLAR	0.01MF	10% 100V	
C5321	1-108-680-11	MYLAR	0.001MF	10% 200V	
C5322	1-108-680-11	MYLAR	0.001MF	10% 200V	
C5323	1-108-700-11	MYLAR	0.047MF	10% 200V	
C5324	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5325	1-102-820-00	CERAMIC	330PF	5% 50V	
C5327	1-123-328-00	ELECT	4.7MF	20% 25V	
C5328	1-121-246-00	ELECT	4.7MF	160V	
C5329	1-108-618-11	MYLAR	0.0022MF	10% 100V	
C5330	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5331	1-102-947-00	CERAMIC	10PF	5% 50V	
C5332	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5333	1-108-688-11	MYLAR	0.0047MF	10% 200V	
C5334	1-123-116-00	ELECT	1MF	160V	
C5335	1-130-121-00	FILM	0.0045MF	3% 1.5KV	
C5336	1-123-323-00	ELECT	470MF	20% 16V	
C5337	1-130-157-00	FILM	1MF	5% 200V	
C5338	1-108-702-11	MYLAR	0.068MF	10% 200V	
C5339	1-102-978-00	CERAMIC	220PF	5% 50V	
C5340	1-108-626-11	MYLAR	0.01MF	10% 100V	
C5341	1-108-680-11	MYLAR	0.001MF	10% 200V	
C5342	1-108-680-11	MYLAR	0.001MF	10% 200V	
C5343	1-108-700-11	MYLAR	0.047MF	10% 200V	
C5344	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5345	1-102-820-00	CERAMIC	330PF	5% 50V	
C5347	1-123-328-00	ELECT	4.7MF	20% 25V	
C5348	1-121-246-00	ELECT	4.7MF	160V	
C5349	1-108-618-11	MYLAR	0.0022MF	10% 100V	
C5350	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5351	1-102-947-00	CERAMIC	10PF	5% 50V	
C5352	1-108-700-11	MYLAR	0.047MF	10% 200V	
C5353	1-108-688-11	MYLAR	0.0047MF	10% 200V	
C5354	1-123-116-00	ELECT	1MF	160V	
C5355	1-123-323-00	ELECT	470MF	20% 16V	
C5356	1-130-121-00	FILM	0.0045MF	3% 1.5KV	
C5357	1-130-157-00	FILM	1MF	5% 200V	
C5358	1-108-630-11	MYLAR	0.022MF	10% 100V	
C5359	1-102-978-00	CERAMIC	220PF	5% 50V	
		DIODE			
D5301	8-719-815-55	DIODE 1S1555			
D5302	8-719-815-55	DIODE 1S1555			
D5303	8-719-815-55	DIODE 1S1555			
D5304	8-719-320-11	DIODE HFIA			
D5305	=>8-719-305-15	DIODE GH3F			
D5306	=>8-719-305-15	DIODE GH3F			
D5308	8-719-815-55	DIODE 1S1555			
D5309	8-719-815-55	DIODE 1S1555			
D5310	8-719-815-55	DIODE 1S1555			
D5311	8-719-320-11	DIODE HFIA			
D5312	=>8-719-305-15	DIODE GH3F			
D5313	=>8-719-305-15	DIODE GH3F			
D5315	8-719-815-55	DIODE 1S1555			
D5316	8-719-815-55	DIODE 1S1555			
D5317	8-719-815-55	DIODE 1S1555			
D5318	8-719-320-11	DIODE HFIA			
D5319	=>8-719-305-15	DIODE GH3F			
D5320	=>8-719-305-15	DIODE GH3F			
		CONNECTOR			
DB1	♦:1-506-348-21	6P PLUG			
DB2	♦:1-508-768-00	6P PLUG			
DB3	♦:1-508-766-00	4P PLUG (M)			
DB4	♦:1-508-768-00	6P PLUG			
DB5	♦:1-508-766-00	4P PLUG (M)			
DB6	♦:1-508-766-00	4P PLUG (M			
DB7	♦:1-508-784-00	1P PLUG			
DB8	♦:1-508-768-00	6P PLUG			
DB9	♦:1-508-786-00	2P PLUG (M)			
DB10	♦:1-508-784-00	1P PLUG			
DB11	♦:1-506-349-21	3P PLUG (L)			
DB12	♦:1-506-355-21	PLUG, 5P			
DB13	♦:1-508-767-00	5P PLUG			
DB14	♦:1-506-355-21	PLUG, 5P			
DB15	♦:1-508-767-00	5P PLUG			
DB16	♦:1-506-355-21	PLUG, 5P			
DB17	♦:1-508-767-00	5P PLUG			
		COIL			
L5301	1-407-500-00	MICRO INDUCTOR 4.7MMH			
L5302	1-407-500-00	MICRO INDUCTOR 4.7MMH			
L5303	1-407-500-00	MICRO INDUCTOR 4.7MMH			

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RESISTORS
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COILS
- MMH : mH, UH : μH

DB

Ref.No	Part No	Description	Remark
		TRANSISTOR	
Q5301	8-765-020-00	TRANSISTOR 2SA884	
Q5302	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5303	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5304	=>8-765-170-01	TRANSISTOR 2SC1962	
Q5305	8-729-307-82	TRANSISTOR 2SD478	
Q5306	8-729-326-82	TRANSISTOR 2SB568	
Q5307	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5308	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5309	8-729-309-06	TRANSISTOR 2SC1890A	
Q5310	8-729-307-82	TRANSISTOR 2SD478	
Q5311	8-729-326-82	TRANSISTOR 2SB568	
Q5312	8-765-222-20	TRANSISTOR 2SC1963	
Q5313	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5314	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5315	8-729-663-47	TRANSISTOR 2SC1364	
Q5316	8-729-316-12	TRANSISTOR 2SC1061	
Q5317	8-729-317-12	TRANSISTOR 2SA671	
Q5318	8-729-307-82	TRANSISTOR 2SD478	
Q5319	8-729-309-06	TRANSISTOR 2SC1890A	
Q5320	8-765-020-00	TRANSISTOR 2SA884	
Q5321	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5322	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5323	=>8-765-170-01	TRANSISTOR 2SC1962	
Q5324	8-729-307-82	TRANSISTOR 2SD478	
Q5325	8-729-336-82	TRANSISTOR 2SB568	
Q5326	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5327	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5328	8-729-309-06	TRANSISTOR 2SC1890A	
Q5329	8-729-307-82	TRANSISTOR 2SD478	
Q5330	8-729-326-82	TRANSISTOR 2SB568	
Q5331	8-765-222-20	TRANSISTOR 2SC1963	
Q5332	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5333	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5334	8-729-316-12	TRANSISTOR 2SC1061	
Q5335	8-729-317-12	TRANSISTOR 2SA671	
Q5336	8-729-663-47	TRANSISTOR 2SC1364	
Q5337	8-729-307-82	TRANSISTOR 2SD478	
Q5338	8-729-309-06	TRANSISTOR 2SC1890A	
Q5340	8-765-020-00	TRANSISTOR 2SA884	
Q5341	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5342	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5343	=>8-765-170-01	TRANSISTOR 2SC1962	
Q5344	8-729-307-82	TRANSISTOR 2SD478	
Q5345	8-729-326-82	TRANSISTOR 2SB568	
Q5346	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5347	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5348	8-729-309-06	TRANSISTOR 2SC1890A	
Q5349	8-729-307-82	TRANSISTOR 2SD478	
Q5350	8-729-326-82	TRANSISTOR 2SB568	
Q5351	8-765-222-20	TRANSISTOR 2SC1963	
Q5352	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5353	=>8-729-612-77	TRANSISTOR 2SA1027R	
Q5354	8-729-316-12	TRANSISTOR 2SC1061	
Q5355	8-729-317-12	TRANSISTOR 2SA671	
Q5356	8-729-663-47	TRANSISTOR 2SC1364	
Q5357	8-729-307-82	TRANSISTOR 2SD478	
Q5358	8-729-309-06	TRANSISTOR 2SC1890A	

Ref.No	Part No	Description				Remark
		RESISTOR				
R5301	1-214-156-00	METAL	10K	1%	1/4W	
R5302	1-246-539-00	CARBON	560K	5%	1/4W	
R5303	1-246-515-00	CARBON	56K	5%	1/4W	
R5304	1-246-515-00	CARBON	56K	5%	1/4W	
R5305	1-214-600-00	METAL	82K	5%	1W	F
R5306	1-246-469-00	CARBON	680	5%	1/4W	
R5307	1-246-469-00	CARBON	680	5%	1/4W	
R5308	1-246-994-00	CARBON	680	5%	1/8W	F
R5309	1-206-759-00	METAL	27K	5%	3W	F
R5310	1-213-154-00	METAL	8.2K	5%	1W	F
R5311	1-214-099-00	METAL	43	1%	1/4W	
R5312	1-214-100-00	METAL	47	1%	1/4W	
R5313	1-214-100-00	METAL	47	1%	1/4W	
R5314	1-214-599-00	METAL	68K	5%	1W	F
R5315	1-246-994-00	CARBON	680	5%	1/8W	F
R5316	1-213-158-00	METAL	18K	5%	1W	F
R5317	1-246-507-00	CARBON	27K	5%	1/4W	
R5318	1-246-507-00	CARBON	27K	5%	1/4W	
R5319	1-213-151-00	METAL	4.7K	5%	1W	F
R5320	1-214-092-00	METAL	22	1%	1/4W	
R5321	1-214-092-00	METAL	22	1%	1/4W	
R5322	1-214-144-00	METAL	3.3K	1%	1/4W	
R5323	1-246-517-00	CARBON	68K	5%	1/4W	
R5324	1-246-517-00	CARBON	68K	5%	1/4W	
R5325	1-246-517-00	CARBON	68K	5%	1/4W	
R5326	1-246-487-00	CARBON	3.9K	5%	1/4W	
R5327	1-246-469-00	CARBON	680	5%	1/4W	
R5328	1-246-469-00	CARBON	680	5%	1/4W	F
R5329	1-213-143-00	METAL	1K	5%	1W	F
R5330	1-213-148-00	METAL	2.7K	5%	1W	
R5331	1-214-092-00	METAL	22	1%	1/4W	
R5332	1-214-092-00	METAL	22	1%	1/4W	
R5333	1-214-092-00	METAL	22	1%	1/4W	
R5334	1-247-040-00	CARBON	1K	5%	1/8W	F
R5335	1-206-751-00	METAL	12K	5%	3W	F
R5336	1-206-656-00	METAL	470	5%	2W	F
R5337	1-246-523-00	CARBON	120K	5%	1/4W	
R5338	1-246-994-00	CARBON	680	5%	1/8W	F
R5339	1-246-425-00	CARBON	10	5%	1/4W	
R5340	1-246-425-00	CARBON	10	5%	1/4W	
R5341	1-246-539-00	CARBON	560K	5%	1/4W	
R5342	1-246-515-00	CARBON	56K	5%	1/4W	
R5343	1-246-515-00	CARBON	56K	5%	1/4W	F
R5344	1-214-600-00	METAL	82K	5%	1W	
R5345	1-246-469-00	CARBON	680	5%	1/4W	

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- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : μF, PF : μμF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : μH

DB S

Ref.No	Part No	Description				Remark
R5346	1-246-469-00	CARBON	680	5%	1/4W	
R5347	1-246-994-00	CARBON	680	5%	1/8W	F
R5348	1-206-759-00	METAL	27K	5%	3W	F
R5349	1-213-154-00	METAL	8.2K	5%	1W	F
R5350	1-214-099-00	METAL	43	1%	1/4W	
R5351	1-214-100-00	METAL	47	1%	1/4W	
R5352	1-214-100-00	METAL	47	1%	1/4W	
R5353	1-214-599-00	METAL	68K	5%	1W	F
R5354	1-246-994-00	CARBON	680	5%	1/8W	F
R5355	1-213-158-00	METAL	18K	5%	1W	F
R5356	1-246-507-00	CARBON	27K	5%	1/4W	
R5357	1-246-507-00	CARBON	27K	5%	1/4W	
R5358	1-214-100-00	METAL	47	1%	1/4W	
R5360	1-213-151-00	METAL	4.7K	5%	1W	F
R5361	1-214-144-00	METAL	3.3K	1%	1/4W	
R5362	1-246-517-00	CARBON	68K	5%	1/4W	
R5363	1-246-517-00	CARBON	68K	5%	1/4W	
R5364	1-246-517-00	CARBON	68K	5%	1/4W	
R5365	1-246-487-00	CARBON	3.9K	5%	1/4W	
R5366	1-246-469-00	CARBON	680	5%	1/4W	
R5367	1-246-469-00	CARBON	680	5%	1/4W	
R5368	1-213-143-00	METAL	1K	5%	1W	F
R5369	1-246-994-00	CARBON	680	5%	1/8W	F
R5370	1-214-092-00	METAL	22	1%	1/4W	
R5371	1-214-092-00	METAL	22	1%	1/4W	
R5372	1-214-092-00	METAL	22	1%	1/4W	
R5373	1-247-040-00	CARBON	1K	5%	1/8W	F
R5374	1-206-751-00	METAL	12K	5%	3W	F
R5375	1-206-656-00	METAL	470	5%	2W	F
R5376	1-246-523-00	CARBON	120K	5%	1/4W	
R5377	1-213-148-00	METAL	2.7K	5%	1W	F
R5378	1-246-425-00	CARBON	10	5%	1/4W	
R5379	1-246-425-00	CARBON	10	5%	1/4W	
R5380	1-214-156-00	METAL	10K	1%	1/4W	
R5381	1-246-539-00	CARBON	560K	5%	1/4W	
R5382	1-246-515-00	CARBON	56K	5%	1/4W	
R5383	1-246-515-00	CARBON	56K	5%	1/4W	
R5384	1-214-600-00	METAL	82K	5%	1W	F
R5385	1-246-469-00	CARBON	680	5%	1/4W	
R5386	1-246-469-00	CARBON	680	5%	1/4W	
R5387	1-246-994-00	CARBON	680	5%	1/8W	F
R5388	1-206-759-00	METAL	27K	5%	3W	F
R5389	1-213-154-00	METAL	8.2K	5%	1W	F
R5390	1-214-099-00	METAL	43	1%	1/4W	
R5391	1-214-100-00	METAL	47	1%	1/4W	
R5392	1-214-100-00	METAL	47	1%	1/4W	
R5393	1-214-599-00	METAL	68K	5%	1W	F
R5394	1-246-994-00	CARBON	680	5%	1/8W	F
R5395	1-213-158-00	METAL	18K	5%	1W	F
R5396	1-246-507-00	CARBON	27K	5%	1/4W	
R5397	1-246-507-00	CARBON	27K	5%	1/4W	
R5398	1-214-092-00	METAL	22	1%	1/4W	
R5399	1-214-092-00	METAL	22	1%	1/4W	
R5400	1-213-151-00	METAL	4.7K	5%	1W	F
R5401	1-214-144-00	METAL	3.3K	1%	1/4W	
R5402	1-246-517-00	CARBON	68K	5%	1/4W	
R5403	1-246-517-00	CARBON	68K	5%	1/4W	
R5404	1-246-517-00	CARBON	68K	5%	1/4W	
R5405	1-246-487-00	CARBON	3.9K	5%	1/4W	
R5406	1-246-469-00	CARBON	680	5%	1/4W	
R5407	1-246-469-00	CARBON	680	5%	1/4W	
R5408	1-213-143-00	METAL	1K	5%	1W	F
R5409	1-246-994-00	CARBON	680	5%	1/8W	F
R5410	1-214-092-00	METAL	22	1%	1/4W	
R5411	1-214-092-00	METAL	22	1%	1/4W	
R5412	1-214-092-00	METAL	22	1%	1/4W	
R5413	1-213-148-00	METAL	2.7K	5%	1W	F
R5414	1-247-040-00	CARBON	1K	5%	1/8W	F
R5415	1-206-751-00	METAL	12K	5%	3W	F
R5416	1-206-656-00	METAL	470	5%	2W	F
R5417	1-246-523-00	CARBON	120K	5%	1/4W	
R5418	1-246-425-00	CARBON	10	5%	1/4W	
R5419	1-246-425-00	CARBON	10	5%	1/4W	
R5420	1-214-156-00	METAL	10K	1%	1/4W	
R5421	1-246-527-00	CARBON	180K	5%	1/4W	
R5422	1-213-149-00	METAL	3.3	5%	1W	F
R5423	1-213-149-00	METAL	3.3	5%	1W	F
R5424	1-213-149-00	METAL	3.3	5%	1W	F

TRANSFORMER

T5301	1-439-137-00	TRANSFORMER, HORIZONTAL OUTPUT	
T5302	1-439-137-00	TRANSFORMER, HORIZONTAL OUTPUT	
T5303	1-439-137-00	TRANSFORMER, HORIZONTAL OUTPUT	

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♦:1-603-228-00 S BOARD E-111

CAPACITOR

C101	1-123-329-00	ELECT	10MF	20%	25V
C102	1-123-329-00	ELECT	10MF	20%	25V
C103	1-123-329-00	ELECT	10MF	20%	25V
C104	1-123-318-00	ELECT	33MF	20%	16V
C105	1-123-318-00	ELECT	33MF	20%	16V
C106	1-108-638-00	MYLAR	0.1MF	10%	100V
C108	1-108-634-11	MYLAR	0.047MF	10%	100V
C109	1-108-636-11	MYLAR	0.068MF	10%	100V

TRANSISTOR

Q101	8-729-663-47	TRANSISTOR 2SC1364

RESISTOR

R102	1-246-465-00	CARBON	470	5%	1/4W
R103	1-246-509-00	CARBON	33K	5%	1/4W
R104	1-246-533-00	CARBON	330K	5%	1/4W
R105	1-246-481-00	CARBON	2.2K	5%	1/4W

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RESISTORS
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COILS
- MMH : mH, UH : μH

K S HB HA

Ref.No	Part No	Description	Remark
S1	♦:1-560-127-00	PLUG, CONNECTOR (2.5MM) 7P	

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♦:1-603-226-00 HA BOARD E-155

CAPACITOR

C951	1-123-318-00	ELECT	33MF	20%	16V
C952	1-123-318-00	ELECT	33MF	20%	16V

RESISTOR

R951	1-246-493-00	CARBON	6.8K	5%	1/4W
R952	1-246-473-00	CARBON	1K	5%	1/4W
R953	1-246-537-00	CARBON	470K	5%	1/4W

VARIABLE RESISTOR

RV951	1-226-498-00	RES, VAR, CARBON 10K
RV952	1-226-498-00	RES, VAR, CARBON 10K
RV953	1-226-498-00	RES, VAR, CARBON 10K
RV954	1-224-555-00	RES, VAR, CARBON 50K
RV955	1-224-570-31	RES, VAR, CARBON 10K
RV956	1-224-570-31	RES, VAR, CARBON 10K
RV957	1-224-571-00	RES, VAR, CARBON 5K
RV958	1-224-571-00	RES, VAR, CARBON 5K
RV959	1-224-571-00	RES, VAR, CARBON 5K
RV960	1-224-571-00	RES, VAR, CARBON 5K
RV961	1-224-571-00	RES, VAR, CARBON 5K

SWITCH

S951	1-516-640-00	SWITCH, SLIDE
S952	1-516-640-00	SWITCH, SLIDE

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♦:1-587-481-00 HB BOARD

CONNECTOR

HB1	♦:1-508-784-00	1P PLUG
HB2	♦:1-508-784-00	1P PLUG
HB3	♦:1-508-784-00	1P PLUG
HB4	♦:1-508-784-00	1P PLUG
HB5	♦:1-508-786-00	2P PLUG (M)

RESISTOR

R5451	1-202-653-11	COMPSITION	2.2M	5%	1/2W
R5452	1-202-653-11	COMPSITION	2.2M	5%	1/2W
R5453	1-202-653-11	COMPSITION	2.2M	5%	1/2W
R5454	1-202-621-00	COMPSITION	100K	5%	1/2W

VARIABLE RESISTOR

RV5451	1-226-114-00	RES, ADJ, METAL GLAZE 2.2M
RV5452	1-226-114-00	RES, ADJ, METAL GLAZE 2.2M
RV5453	1-226-114-00	RES, ADJ, METAL GLAZE 2.2M

Ref.No	Part No	Description			Remark
	♦:A-1380-054-A	K BOARD, COMPLETE			E-156
	♦:4-323-833-00	HEAT SINK, PIN OUT			

CAPACITOR

C2001	1-108-630-11	MYLAR	0.022MF	10%	100V
C2002	1-108-618-11	MYLAR	0.0022MF	10%	100V
C2003	1-102-824-00	CERAMIC	430PF	5%	50V
C2004	1-108-626-11	MYLAR	0.01MF	10%	100V
C2006	1-123-318-00	ELECT	33MF	20%	16V
C2007	1-108-614-11	MYLAR	0.001MF	10%	100V
C2008	1-102-816-00	CERAMIC	120PF	5%	50V
C2009	1-123-352-00	ELECT	1MF	20%	50V
C2010	1-108-642-11	MYLAR	0.22MF	10%	100V
C2011	1-108-628-11	MYLAR	0.015MF	10%	100V
C2012	1-102-820-00	CERAMIC	330PF	5%	50V
C2013	1-102-973-00	CERAMIC	100PF	5%	50V
C2014	1-102-980-00	CERAMIC	270PF	5%	50V
C2015	1-102-971-00	CERAMIC	82PF	5%	50V
C2021	1-123-319-00	ELECT	47MF	20%	16V
C2031	1-123-328-00	ELECT	4.7MF	20%	25V
C2032	1-102-820-00	CERAMIC	330PF	5%	50V
C2033	1-102-978-00	CERAMIC	220PF	5%	50V
C2034	1-108-624-00	MYLAR	0.0068MF	10%	100V
C2035	1-123-381-00	ELECT	2.2MF	20%	100V
C2036	1-121-246-00	ELECT	4.7MF		160V
C2037	1-123-252-00	ELECT	1MF		160V
C2038	1-123-316-00	ELECT	10MF	20%	16V
C2040	1-108-632-11	MYLAR	0.033MF	10%	100V
C2042	1-102-824-00	CERAMIC	430PF	5%	50V
C2043	1-123-331-00	ELECT	33MF	20%	25V
C2044	1-123-026-00	ELECT	2.2MF		160V
C2045	1-102-030-00	CERAMIC	330PF	10%	500V
C2046	1-123-026-00	ELECT	2.2MF		160V
C2047	1-108-626-11	MYLAR	0.01MF	10%	100V
C2048	1-123-316-00	ELECT	10MF	20%	16V
C2049	1-123-252-00	ELECT	1MF		160V

DIODE

D2001	8-719-815-55	DIODE 1S1555
D2002	8-719-815-55	DIODE 1S1555
D2003	8-719-815-55	DIODE 1S1555
D2004	8-719-168-07	DIODE RD6.8E-B

IC

IC2003	1-231-416-00	MODULE, POWER

CONNECTOR

K1	♦:1-508-784-00	1P PLUG
K2	♦:1-508-765-00	3P PLUG (M)
K3	♦:1-508-784-00	1P PLUG
K4	♦:1-506-349-11	3P PLUG (L)
K5	♦:1-508-765-00	3P PLUG (M)

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RESISTORS
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COILS
- MMH : mH, UH : μH

K

Ref.No	Part No	Description	Remark
K6	♦:1-508-765-00	3P PLUG (M)	
K7	♦:1-508-765-00	3P PLUG (M)	
K13	♦:1-506-355-21	PLUG, 5P	
K14	♦:1-506-355-21	PLUG, 5P	
K15	♦:1-508-784-00	1P PLUG	
		COIL	
L2001	1-407-713-11	MICRO INDUCTOR 470UH	
		TRANSISTOR	
Q2001	8-729-663-47	TRANSISTOR 2SC1364	
Q2002	8-729-663-47	TRANSISTOR 2SC1364	
Q2003	8-729-663-47	TRANSISTOR 2SC1364	
Q2004	8-729-663-47	TRANSISTOR 2SC1364	
Q2005	8-729-663-47	TRANSISTOR 2SC1364	
Q2006	8-729-663-47	TRANSISTOR 2SC1364	
Q2007	8-729-663-47	TRANSISTOR 2SC1364	
Q2008	8-729-663-47	TRANSISTOR 2SC1364	
Q2009	8-729-663-47	TRANSISTOR 2SC1364	
Q2010	8-729-663-47	TRANSISTOR 2SC1364	
Q2011	8-729-663-47	TRANSISTOR 2SC1364	
Q2012	8-729-663-47	TRANSISTOR 2SC1364	
Q2019	8-729-307-82	TRANSISTOR 2SD478	
Q2020=>	8-765-170-01	TRANSISTOR 2SC1962	
Q2021	8-729-326-82	TRANSISTOR 2SB568	
Q2022	8-729-663-47	TRANSISTOR 2SC1364	
Q2023	8-729-309-06	TRANSISTOR 2SC1890A	
Q2024	8-729-663-47	TRANSISTOR 2SC1364	
		RESISTOR	
R2001	1-246-505-00	CARBON 22K 5% 1/4W	
R2002	1-246-529-00	CARBON 220K 5% 1/4W	
R2003	1-246-519-00	CARBON 82K 5% 1/4W	
R2004	1-246-533-00	CARBON 330K 5% 1/4W	
R2005	1-246-493-00	CARBON 6.8K 5% 1/4W	
R2006	1-246-515-00	CARBON 56K 5% 1/4W	
R2007	1-246-531-00	CARBON 270K 5% 1/4W	
R2008	1-246-497-00	CARBON 10K 5% 1/4W	
R2009	1-246-485-00	CARBON 3.3K 5% 1/4W	
R2010	1-246-495-00	CARBON 8.2K 5% 1/4W	
R2011	1-246-521-00	CARBON 100K 5% 1/4W	
R2012	1-246-473-00	CARBON 1K 5% 1/4W	
R2013	1-246-469-00	CARBON 680 5% 1/4W	
R2014	1-246-469-00	CARBON 680 5% 1/4W	
R2015	1-246-479-00	CARBON 1.8K 5% 1/4W	
R2016	1-246-473-00	CARBON 1K 5% 1/4W	
R2017	1-246-455-00	CARBON 180 5% 1/4W	
R2018	1-246-481-00	CARBON 2.2K 5% 1/4W	
R2019	1-246-519-00	CARBON 82K 5% 1/4W	
R2020	1-246-513-00	CARBON 47K 5% 1/4W	
R2021	1-246-537-00	CARBON 470K 5% 1/4W	
R2022	1-246-473-00	CARBON 1K 5% 1/4W	
R2023	1-246-473-00	CARBON 1K 5% 1/4W	
R2024	1-246-479-00	CARBON 1.8K 5% 1/4W	
R2025	1-246-497-00	CARBON 10K 5% 1/4W	
R2026	1-246-513-00	CARBON 47K 5% 1/4W	
R2027	1-246-493-00	CARBON 6.8K 5% 1/4W	
R2028	1-246-509-00	CARBON 33K 5% 1/4W	
R2029	1-246-501-00	CARBON 15K 5% 1/4W	
R2030	1-246-489-00	CARBON 4.7K 5% 1/4W	
R2031	1-246-521-00	CARBON 100K 5% 1/4W	
R2032	1-246-489-00	CARBON 4.7K 5% 1/4W	
R2033	1-246-489-00	CARBON 4.7K 5% 1/4W	
R2034	1-246-489-00	CARBON 4.7K 5% 1/4W	
R2035	1-246-509-00	CARBON 33K 5% 1/4W	
R2036	1-246-489-00	CARBON 4.7K 5% 1/4W	
R2037	1-246-529-00	CARBON 220K 5% 1/4W	
R2056	1-246-483-00	CARBON 2.7K 5% 1/4W	
R2057	1-246-487-00	CARBON 3.9K 5% 1/4W	
R2058	1-246-487-00	CARBON 3.9K 5% 1/4W	
R2059	1-246-523-00	CARBON 120K 5% 1/4W	
R2060	1-244-889-00	CARBON 4.7K 5% 1/2W	
R2061	1-246-461-00	CARBON 330 5% 1/4W	
R2062	1-213-156-00	METAL 12K 5% 1W	F
R2063	1-247-043-00	CARBON 15 5% 1/2W	F
R2064	1-247-043-00	CARBON 15 5% 1/2W	F
R2065	1-247-043-00	CARBON 15 5% 1/2W	F
R2066	1-246-521-00	CARBON 100K 5% 1/4W	
R2067	1-246-489-00	CARBON 4.7K 5% 1/4W	
R2068	1-246-509-00	CARBON 33K 5% 1/4W	
R2069	1-246-473-00	CARBON 1K 5% 1/4W	
R2070	1-246-521-00	CARBON 100K 5% 1/4W	
R2071	1-246-495-00	CARBON 8.2K 5% 1/4W	
R2072	1-247-037-00	CARBON 390 5% 1/8W	F
R2073	1-206-690-00	METAL 12K 5% 2W	F
R2074	1-246-463-00	CARBON 390 5% 1/4W	
R2075	1-246-509-00	CARBON 33K 5% 1/4W	
R2076	1-246-528-00	CARBON 200K 5% 1/4W	
R2077	1-246-515-00	CARBON 56K 5% 1/4W	
R2078	1-246-513-00	CARBON 47K 5% 1/4W	
		VARIABLE RESISTOR	
RV2001	1-224-990-00	RES, ADJ, CARBON 47K	
RV2002	1-224-990-00	RES, ADJ, CARBON 47K	
		SWITCH	
S2001	1-516-640-00	SWITCH,SLIDE	
		TRANSFORMER	
T2001⚠	1-427-489-00	TRANSFORMER, SOUND OUTPUT	
T2002⚠	1-427-481-00	TRANSFOEMER, OUTPUT (AUDIO)	
		**********	
		MISCELLANEOUS	
⚠	1-451-190-00	DEFLECTION YOKE (SY-116)	E-56
⚠	1-452-203-41	CRT NECK ASSEMBLY	E-54
⚠	1-463-264-00	TUNER (BT-852)	E-112
♦	1-509-576-00	CONNECTOR ASSY (2P)	
♦	1-509-828-12	CONNECTOR ASSY (LARGE) 5P	
♦	1-534-885-00	CABLE, P-P	E-109
	1-536-376-31	L-TYPE TERMINAL STRIP	E-110
⚠	1-536-584-00	TERMINAL BOARD ASSY, ANTENNA	E-113
♦	1-551-613-00	CONNECTOR ASSY, MINIATURE 2P	
♦	1-551-614-00	CONNECTOR ASSY, MINIATURE 2P	
♦	1-551-792-00	CONNECTOR ASSY (L) 2P	
♦	1-551-845-00	CONNECTOR ASSY (2.5MM) 10P	
♦	1-551-910-00	CONNECTOR ASSY, MINIATURE 6P	
♦	1-551-933-00	CONNECTOR ASSY (2.5MM) 3P	
♦	1-551-934-00	CONNECTOR ASSY (2.5MM) 3P	
♦	1-555-023-00	CONNECTOR ASSY, MINIATURE 3P	
♦	1-555-024-00	CONNECTOR ASSY, MINIATURE 3P	
♦	1-555-182-00	CONNECTOR ASSY, MINIATURE 4P	
♦	1-555-183-00	CONNECTOR ASSY, MINIATURE 4P	
♦	1-555-188-00	CONNECTOR, MINIATURE 2P	
♦	1-555-192-00	CONNECTOR ASSY (LARGE) 4P	
♦	1-555-225-00	CONNECTOR ASSY 1P	
♦	1-555-342-00	CONNECTOR ASSY (2.5MM) 3P	
♦	1-555-346-00	CONNECTOR ASSY, MINIATURE 1P	
♦	1-555-347-00	CONNECTOR ASSY, MINIATURE 1P	
♦	1-555-348-00	CONNECTOR, MINIATURE 1P	
♦	1-555-349-00	CONNECTOR, MINIATURE 1P	
♦	1-555-390-00	CONNECTOR ASSY, MINIATURE 5P	
♦	1-555-433-00	CONNECTOR ASSY (LARGE) 6P	
♦	1-555-436-00	CONNECTOR ASSY (LARGE) 3P	
⚠	1-555-465-00	CORD, POWER	E-2
♦	1-561-014-00	CONNECTOR ASSY, MINIATURE, 1P	
⚠	1-561-347-00	OUTLET, AC	E-115
⚠	8-738-101-05	PICTURE TUBE SD-116 G	E-53
⚠	8-738-102-05	PICTURE TUBE SD-116 B	E-52
⚠	8-738-103-05	PICTURE TUBE SD-116 R	E-57
C901	1-102-155-00	CAP, CERAMIC 330PF 2KV	
C902	1-102-155-00	CAP, CERAMIC 330PF 2KV	
J901	1-507-370-11	PIN JACK, 2P	E-114
J902	1-507-370-11	PIN JACK, 2P	E-114
L901	1-407-365-00	COIL, CHOKE (HIGH FREQUENCY)	
L902	1-407-365-00	COIL, CHOKE (HIGH FREQUENCY)	
L903	1-407-365-00	COIL, CHOKE (HIGH FREQUENCY)	
L904	1-407-365-00	COIL, CHOKE (HIGH FREQUENCY)	
Q901	8-729-311-42	TRANSISTOR 2SC1114	E-101
Q902	8-729-341-34	TRANSISTOR 2SC1413A	E-107
Q904	8-729-301-62	TRANSISTOR 2SC1116A	E-108
RV901	1-226-064-00	RES, VAR, SLIDE 50K-A	E-152
R901	1-205-497-00	RES, SEMENT 120 40W F	E-103
R910	1-246-509-00	RES, CARBON 33K 1/4W	
SP901	1-502-869-00	SPEAKER	E-1
SP902	1-502-869-00	SPEAKER	E-1
S901 ⚠	1-552-658-00	SWITCH, PUSH	E-151

ACCESSORIES AND PACKING MATERIALS

Part No	Description	Remark
X-4346-409-0	GLASS ASSY, TOP	
X-4346-419-1	TABLE ASSY, BOTTOM	
1-561-335-00	CONNECTOR, ANTENNA (EAC-31)	
3-701-630-00	BAG, POLYETHYLENE	
3-701-730-00	BAG, POLYETHYLENE, IBM CARD	
4-334-319-00	LABEL (B), INDICATOR (KP-5020)	
4-346-481-01	SHEET, PROTECTION, GLASS	
4-346-479-01	BAND	
4-346-480-01	BAG, PROTECTION	
4-346-482-01	HOLDER, GLASS	
4-346-484-01	TABLE, BOTTOM	
4-346-485-00	CUSHION (UPPER)	
4-346-486-00	CUSHION (INNER)	
4-346-487-00	CUSHION (LOWER)	
4-346-494-01	INDIVIDUAL CARTON	
4-491-213-21	INSTRUCTION	
4-495-979-21	MANUAL, INSTRUCTION	
7-822-282-01	IBM, CARD (WHITE)	
7-822-282-02	IBM, CARD (PINK)	
7-822-282-03	IBM, CARD (GREEN)	

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
- MF : µF, PF : µµF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : µH

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
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- MF : µF, PF : µµF

RESISTORS
- All resistors are in ohms.
- F : nonflammable.

COILS
- MMH : mH, UH : µH

MEMO

STANDARD PARTS LIST

**** CAPACITOR ELECT ****

uF	6.3V	10V	16V	25V	35V	50V	100V	160V	250V	350V
	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
0.47						1-121-726				
1.0						391	1-123-249	1-123-252	1-123-003	1-121-168
2.2						450	250	026		1-123-028
3.3				1-121-392		393	1-121-995		004	006
4.7				395		396	1-123-255	1-121-246	1-121-759	007
10			1-121-651	398		738	1-121-126	999	1-123-254	008
22			479	480	1-121-662	152	996	1-123-253		022
33			403	404	652	405	997	919		
47		1-121-352	409	410	653	411	1-123-251			
100		414	415	416	357	417	084			
220	1-121-419	420	421	422	261	423				
330	751	805	521	654	655	656				
470	424	425	426	733	361	810				
1000		736	245	657	388	1-123-061				
2200	658	659	660	1-123-067	984					
3300	661	1-121-075	1-123-071							

**** CAPACITOR ****

MYLAR			
	50V	100V	200V
uF	10%	10%	10%
0.001	1-108-227	1-108-365	1-108-409
0.0012	351	366	410
0.0015	228	367	411
0.0018	352	368	412
0.0022	230	369	413
0.0027	353	370	414
0.0033	232	371	415
0.0039	354	372	416
0.0047	234	373	417
0.0056	355	374	418
0.0063	237	375	419
0.0082	356	376	420
0.01	239	377	421
0.012	357	378	422
0.015	240	379	423
0.018	358	380	424
0.022	242	381	425
0.027	359	382	426
0.033	244	383	427
0.039	360	384	428
0.047	246	385	429
0.056	361	386	430
0.068	249	387	431
0.082	362	388	432
0.1	251	389	433
0.12	363	390	434
0.15	252	391	435
0.18	364	392	436
0.22	254	393	437
0.27	854		
0.33	855		
0.39	856		
0.47	857		

CERAMIC								
	pF	Part No.		pF	Part No.		pF	Part No.
	0.5	1-101-837		100	1-102-973		1000	1-101-001
	0.75	586		110	815		2200	002
	1.0	1-102-934		120	816	F	4700	003
	1.5	1-101-576		130	1-101-081		10000	004
	2.0	1-102-935		150	361		22000	005
S	3	936	S	160	367		47000	006
L	4	937		180	1-102-976			
	5	942	L	200	977			
	6	943		220	978			
	7	944		240	979			
	8	945		270	980			
	9	946		300	981			
	10	947		330	820			
	11	948		360	821			
	12	949		390	822			
	13	950		430	823			
	15	951		470	324			
	16	952		510	1-101-059			
	18	953						
	20	958		560	1-102-115			
	22	959		630	116			
	24	960		820	117			
	27	961		1000	074			
	30	962		1200	118			
	33	963		1500	119			
	36	964	B	1800	120			
	39	965		2200	121			
	43	966		2700	122			
	47	1-101-880		3300	123			
	51	882		3900	124			
	56	884		4700	125			
	62	886		5600	126			
	68	888		6800	127			
	75	890		8200	128			
	82	1-102-971		10000	129			
	91	972						

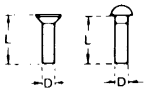
1/4 WATT CARBON RESISTOR

	Part No.		Part No.		Part No.		Part No.		Part No.		Part No.		Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0K	1-246-473-00	10K	1-246-497-00	100K	1-246-521-00	1.0M	1-246-545-00
1.1	402-00	11	426-00	110	450-00	1.1K	474-00	11K	498-00	110K	522-00	1.1M	814-00
1.2	403-00	12	427-00	120	451-00	1.2K	475-00	12K	499-00	120K	523-00	1.2M	815-00
1.3	404-00	13	428-00	130	452-00	1.3K	576-00	13K	500-00	130K	524-00	1.3M	816-00
1.5	405-00	15	429-00	150	453-00	1.5K	577-00	15K	501-00	150K	525-00	1.5M	817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6K	1-246-578-00	16K	1-246-502-00	160K	11-246-26-00	1.6M	1-246-818-00
1.8	407-00	18	431-00	180	455-00	1.8K	579-00	18K	503-00	180K	527-00	1.8M	819-00
2.0	408-00	20	432-00	200	456-00	2.0K	580-00	20K	504-00	200K	528-00	2.0M	820-00
2.2	409-00	22	433-00	220	457-00	2.2K	581-00	22K	505-00	220K	529-00	2.2M	821-00
2.4	410-00	24	434-00	240	458-00	2.4K	582-00	24K	506-00	240K	530-00	2.4M	754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7K	1-246-583-00	27K	1-246-507-00	270K	1-246-531-00	2.7M	1-246-755-00
3.0	412-00	30	436-00	300	460-00	3.0K	584-00	30K	508-00	300K	532-00	3.0M	756-00
3.3	413-00	33	437-00	330	461-00	3.3K	585-00	33K	509-00	330K	533-00	3.3M	757-00
3.6	414-00	36	438-00	360	462-00	3.6K	586-00	36K	510-00	360K	534-00	3.6M	758-00
3.9	415-00	39	439-00	390	463-00	3.9K	587-00	39K	511-00	390K	535-00	3.9M	759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3K	1-246-488-00	43K	1-246-512-00	430K	1-246-536-00	4.3M	1-246-760-00
4.7	417-00	47	441-00	470	465-00	4.7K	489-00	47K	513-00	470K	537-00	4.7M	761-00
5.1	418-00	51	442-00	510	466-00	5.1K	490-00	51K	514-00	510K	538-00	5.1M	762-00
5.6	419-00	56	443-00	560	467-00	5.6K	491-00	56K	515-00	560K	539-00		
6.2	420-00	62	444-00	620	468-00	6.2K	492-00	62K	516-00	620K	540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8K	1-246-493-00	68K	1-246-517-00	680K	1-246-541-00		
7.5	422-00	75	446-00	750	470-00	7.5K	494-00	75K	518-00	750K	542-00		
8.2	423-00	82	447-00	820	471-00	8.2K	495-00	82K	519-00	820K	543-00		
9.1	424-00	91	448-00	910	472-00	9.1K	496-00	91K	520-00	910K	544-00		

HARDWARE NOMENCLATURE

Screw: P 3 x 10

- *L: Length in mm*
- *D: Diameter in mm*
- *Type of head*
- *Indicated slotted-head only. Unless otherwise indicated, it means cross-recessed head (Phillips type).*



Nut, Washer, Retaining ring: N 3

- *Diameter of usable screw or shaft*
- *Reference designation*

Reference Designation	Shape	Description	Remarks
		SCREWS	
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

Reference Designation	Shape	Description	Remarks
		SELF-TAPPING SCREWS	
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
		SET SCREWS	
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
		NUT	
N		nut	
		WASHERS	
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
		RETAINING RINGS	
E		retaining ring	
G		grip-type retaining ring	

SONY
COLOR VIDEO PROJECTION SYSTEM

KP-5020/7220

US Model

Chassis No. KP-5020 : SCC-316A-A
KP-7220 : SCC-317A-A

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

A B

1

2

SCHEMATIC DIAGRAM

Note:

- All capacitors are in μF unless otherwise noted. p : μμF 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms, ¼W unless otherwise noted. k : 1000Ω, M : 1000kΩ
- ▭ : nonflammable resistor.
- △ : internal component.
- ▭ : panel designation.
- The components identified by ⊠ in this manaul have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊠ and repeat the adjustment until the specified value is achieved.
  (Refer to HV HOLD DOWN and HV REG Adjustments on page 42 – 44).
- When replacing the part in below table, be suer to perform the related adjustment.

Part replaced (◪)	Adjustment
G board, DC block R904, IC501, Q801, Q802, Q803, D502, D801, D802, D803, R517, R802, R803, R804, R809, R825, C806, C807, T801	HV HOLD DOWN ADJUSTMENT (R803/804) HV REG ADJUSTMENT (R815/816)
R905, Q806, Q807, D807, D808, D809, D810, R814, R815, R816, R826, Q808, Q904	HV REG ADJUSTMENT (R815/816)

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 20,000-ohm-per-volt VOM.
- ▭ : adjustment for repair.
- Readings are taken with a color-bar video signal input.
- Voltage variations may be noted due to normal production tolerances.
- ——— : B+ bus.
- ♦ : When this portion is touched with the probe of a VOM, the set will be turned off. (Q806 base on G board)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SONY
COLOR VIDEO PROJECTION SYSTEM

KP-5020/7220

US Model

Chassis No. KP-5020 : SCC-316A-A
KP-7220 : SCC-317A-A

WARNING!!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

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Note:

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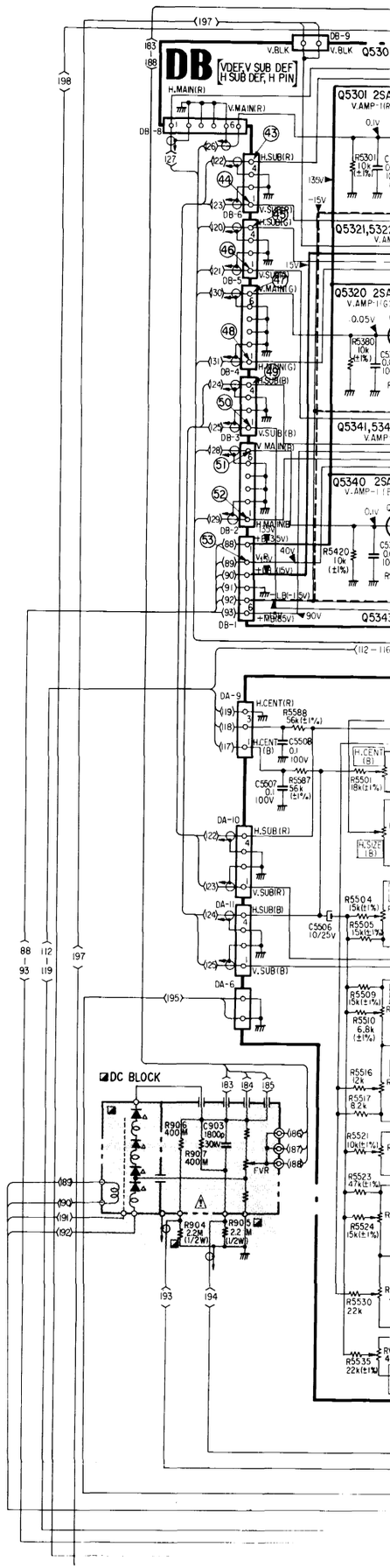
- When replacing the part in below table, be suer to perform the related adjustment.

Part replaced (◪)	Adjustment
G board, DC block R904, IC501, Q801, Q802, Q803, D502	HV HOLD DOWN ADJUSTMENT

SCHEMATIC DIAGRAM



E F G H I J K L

DB [DEF.V SUB DEF.] [H SUB DEF, H PIN]

Q5301 2SA884 V.AMP-1(R)
Q5302,5303 2SA733 V.AMP-2,3(R)
Q5304 2SC1670 V.DRIVE(R)
D5301 1SI555 V.BIAS(R)
Q5307,5308 2SA733 V.SUB AMP-1,2(R)
Q5309 2SC1890A V.SUB.DRIVE(R)
Q5302 1SI555 V.SUB.BIAS(R)
Q5310 2SD478 V.SUB.OUT-1(R)
Q5311 2SB568 V.SUB.OUT-2(R)
Q5312 2SC1963 H.SUB.AMP-1(R)
Q5313,5314 2SA733 H.SUB.AMP-2,3(R)
Q5315 2SC1364 H.SUB.DRIVE(R)
Q5317 2SA671 H.SUB.OUT-2(R)
Q5316 2SC1061 H.SUB.OUT-1(R)
Q5319 2SC1890A H.PIN.DRIVE(R)
Q5318 2SD478 H.PIN.OUT(R)
Q5321,5322 2SA733 V.AMP-2,3(G)
Q5323 2SC1670 V.DRIVE(G)
D5308 1SI555 V.BIAS(G)
Q5305 2SD478 V.OUT-1(R)
Q5306 2SB568 V.OUT-2(R)
Q5326,5327 2SA733 V.SUB.AMP-1,2(G)
D5309 1SI555 V.SUB BIAS(G)
Q5331 2SC1963 H.SUB-AMP-1(G)
Q5332,5333 2SA733 H.SUB.AMP-2,3(G)
Q5336 2SC1364 H.SUB.DRIVE(G)
Q5334 2SC1061 H.SUB.OUT-1(G)
Q5335 2SA671 H.SUB.OUT-2(G)
Q5338 2SC1890A H.PIN.DRIVE(G)
Q5337 2SD478 H.PIN.OUT(G)
Q5320 2SA884 V.AMP-1(G)
Q5329 2SD478 V.SUB.OUT-1(G)
Q5330 2SB568 V.SUB.OUT-2(G)
Q5328 2SC1890A V.SUB.DRIVE(G)
Q5341,5342 2SA733 V.AMP-2,3(B)
D5315 1SI555 V.BIAS(B)
Q5324 2SD478 V.OUT-1(G)
Q5325 2SB568 V.OUT-2(G)
Q5346,5347 2SA733 V.SUB.AMP-1,2(B)
Q5352,5353 2SA733 H.SUB.AMP-2,3(B)
Q5356 2SC1364 H.SUB.DRIVE(B)
Q5355 2SA671 H.SUB.OUT-2(B)
Q5354 2SC1061 H.SUB.OUT-1(B)
Q5358 2SC1890A H.PIN.DRIVE(B)
Q5357 2SD478 H.PIN.OUT(B)
Q5340 2SA884 V.AMP-1(B)
Q5349 2SD478 V.SUB.OUT-1(B)
Q5350 2SB568 V.SUB.OUT-2(B)
Q5351 2SC1963 H.SUB.AMP-1(B)
D5316 1SI555 V.SUB.BIAS(B)
Q5343 2SC1670 V.DRIVE(B)
Q5344 2SD478 V.OUT-1(B)
Q5345 2SB568 V.OUT-2(B)
Q5348 2SC1890A V.SUB.DRIVE(B)
D5318 HF1A H.BLK(B)
D5319 ERC26-15 H.DAMP(B)
D5320 S82C H.STOPPER(B)

DC BLOCK

DA [H,V REGISTRTION]

D5501 EQA01-05S CENT.ZENER-1
D5502 EQA01-05S CENT.ZENER-2
Q5501 2SA733 H.PIN.AMP(B)
Q5502 2SA733 H.PIN.AMP(R)
Q5503 2SA733 V.PARABOLA GEN-1
Q5504 2SA733 V.PARABOLA BUFF-1
Q5505 2SA733 V.PARABOLA GEN-2
Q5506 2SC1364 V.PARABOLA BUFF-2
Q5507 2SC1364 V.PARABOLA GEN-2
Q5508 2SA733 V.SAWTOOTH BUFF-1
Q5509 2SC1364 V.SAWTOOTH BUFF-2
Q5510 2SC1364 V.SAWTOOTH BUFF-3
Q5511 2SA733 -12V.REG
D5503 EQA01-12S -12V.ZENER
Q5512 2SA733 V.PIN.BUFF-1
Q5513 2SC1364 V.PIN.BUFF-2
Q5514 2SC1364 V.PIN.BUFF-3
Q5515 2SA733 V.PIN.GEN
Q5516 2SC1364 V.KEYS.BUFF-1
Q5517 2SC1364 V.KEYS.BUFF-2
Q5518 2SC1364 V.KEYS.AMP-1
Q5519 2SC1364 V KEYS AMP-2
Q5520 2SC1364 V.KEYS.GEN-2
Q5521 2SC1364 V.KEYS.GEN-1
Q5522 2SC1364 V.KEYS.GEN-3
Q5523 2SA733 H.SAWTOOTH BUFF-1
Q5524 2SC1364 H.SAWTOOTH BUFF-2
Q5525 2SC1364 H.SAWTOOTH BUFF-3
Q5526 2SA733 SUB.BOW.BUFF-1
Q5527 2SC1364 SUB.BOW.BUFF-2
Q5528 2SC1364 SUB.BOW.BUFF-3
Q5529 2SA733 SUB.BOW.GEN
Q5530 2SC1364 V.SUB.SKEW.BUFF-1
Q5531 2SC1364 V.SUB.SKEW.BUFF-2
Q5532 2SC1364 V.SUB.SKEW.AMP-1
Q5533 2SC1364 V.SUB.SKEW.AMP-2
Q5534 2SK58 V.SUB.SKEW.GEN-1
Q5535 2SC1364 V.SUB.SKEW.GEN-2
Q5536 2SC1364 V.SUB.SKEW.GEN-3
Q5537 2SA733 H.PALABOLA.BUFF-1
Q5538 2SD364 H.PALABOLA BUFF-2
Q5539 2SC1364 H.PALABOLA BUFF-3

CR [R.OUT]

Q701R 2SC1723 R.OUT
D5311 HF1A H.BLK(G)
D5312 ERC26-15 H.DAMP(G)
D5313 S82C H.STOPPER(G)
D5304 HF1A H.BLK(R)
D5305 ERC26-15 H.DAMP(R)
D5306 S82C H.STOPPER(R)

CG [G.OUT]

Q701G 2SC1723 G.OUT
D5318 HF1A H.BLK(B)
D5319 ERC26-15 H.DAMP(B)
D5320 S82C H.STOPPER(B)

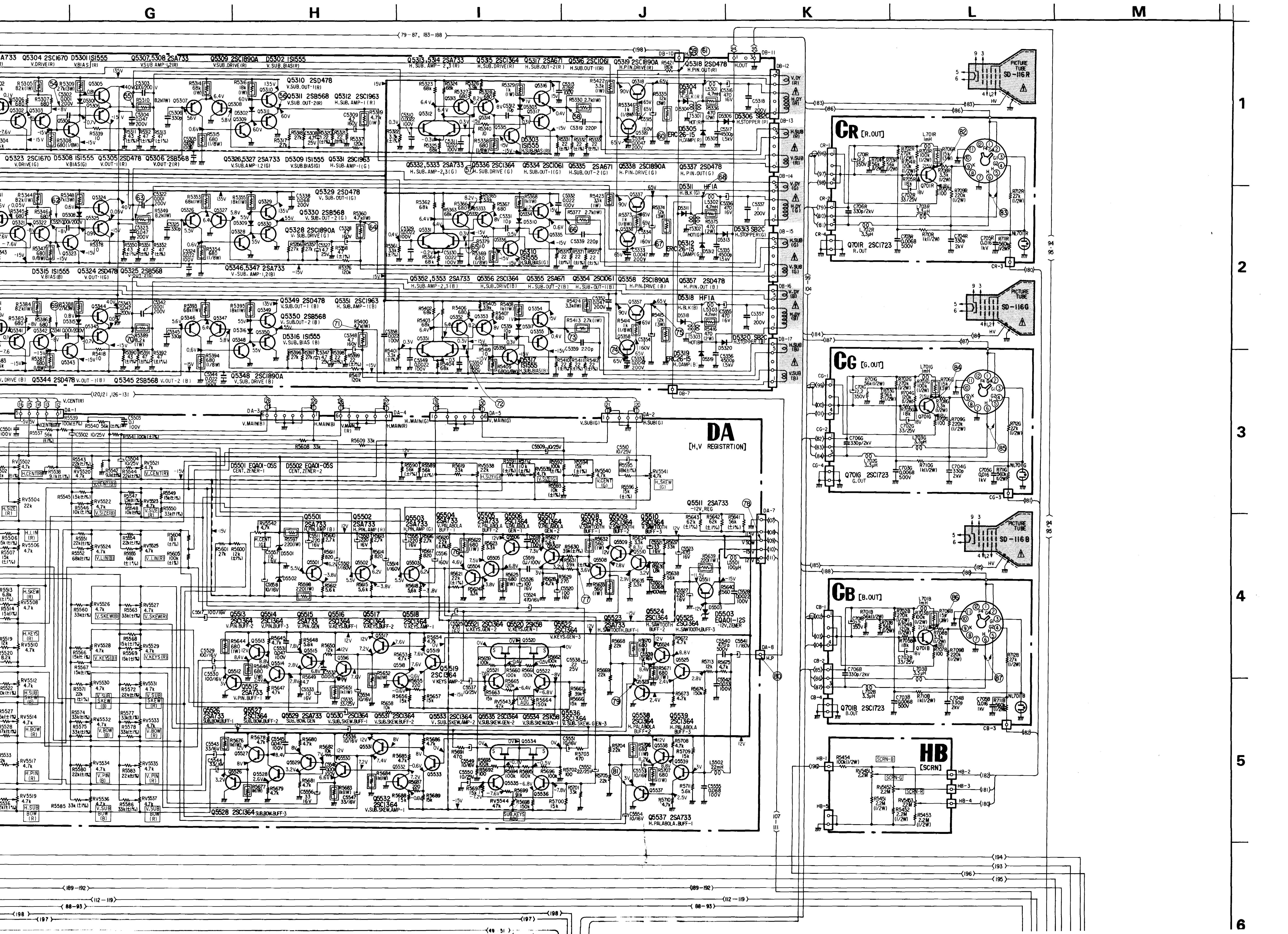
CB [B.OUT]

Q701B 2SC1723 B.OUT

HB [SCRN]

SCRN-B
SCRN-G
SCRN-R

PICTURE TUBE SD-116R
PICTURE TUBE SD-116G
PICTURE TUBE SD-116B



G
H
I
J
K
L
M
1
2
3
4
5
6
DA
[H,V REGISTRTION]
CR [R.OUT]
CG [G.OUT]
CB [B.OUT]
HB
[SCRN]
PICTURE TUBE SD-116R
PICTURE TUBE SD-116G
PICTURE TUBE SD-116B
Q701R 2SC1723 R.OUT
Q701G 2SC1723 G.OUT
Q701B 2SC1723 B.OUT

necessary adjustments indicated. If results do not meet the specified value, change the component identified by ◪ and repeat the adjustment until the specified value is achieved.
(Refer to HV HOLD DOWN and HV REG Adjustments on page 42 – 44).

- When replacing the part in below table, be suer to perform the related adjustment.

Part replaced (◪)	Adjustment
G board, DC block R904, IC501, Q801, Q802, Q803, D502, D801, D802, D803, R517, R802, R803, R804, R809, R825, C806, C807, T801	HV HOLD DOWN ADJUSTMENT (R803/804) HV REG ADJUSTMENT (R815/816)
R905, Q806, Q807, D807, D808, D809, D810, R814, R815, R816, R826, Q808, Q904	HV REG ADJUSTMENT (R815/816)

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 20,000-ohm-per-volt VOM.
- ▭ : adjustment for repair.
- Readings are taken with a color-bar video signal input.
- Voltage variations may be noted due to normal production tolerances.
- ——— : B+ bus.
- ◆ : When this portion is touched with the probe of a VOM, the set will be turned off. (Q806 base on G board)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

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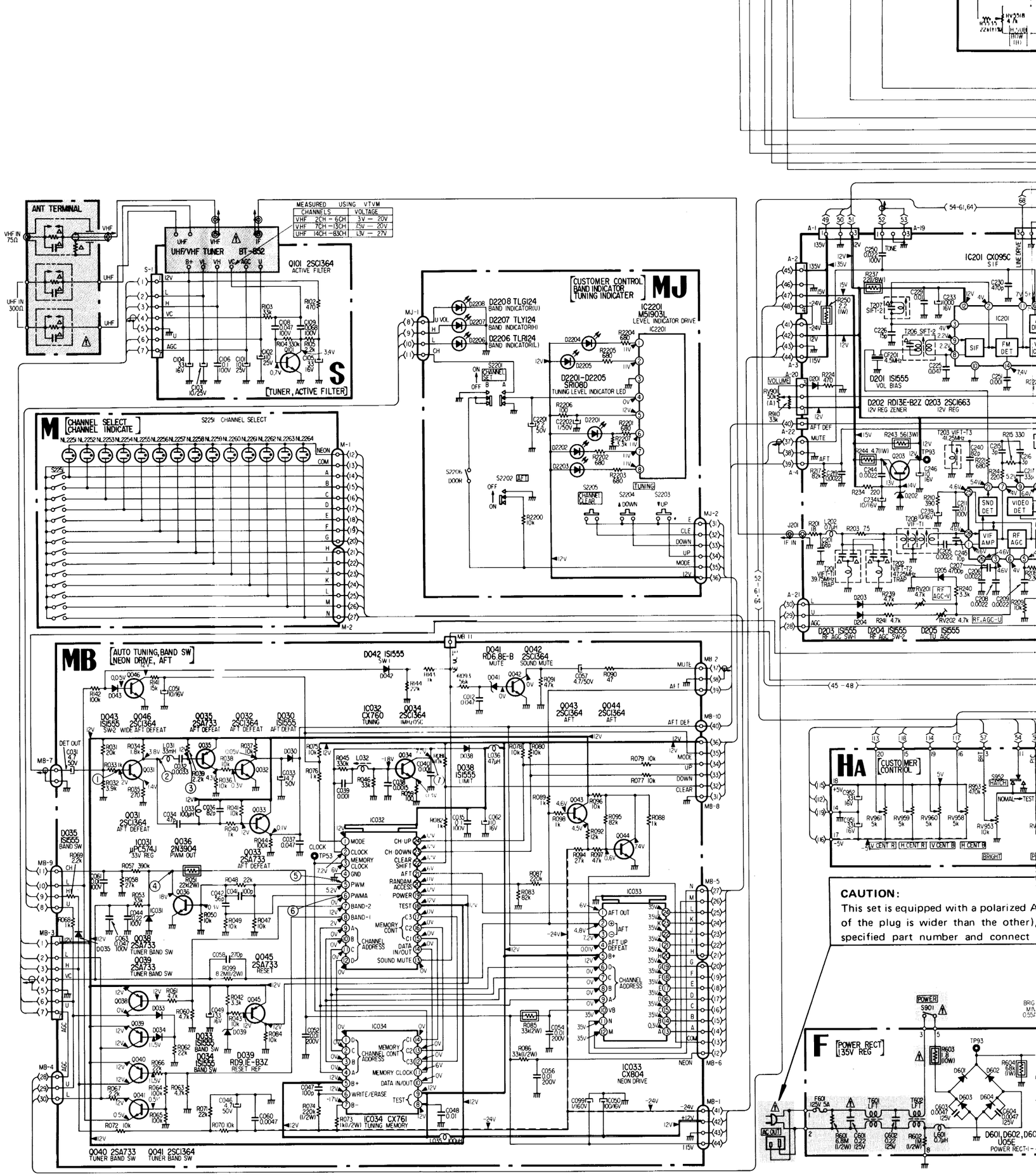
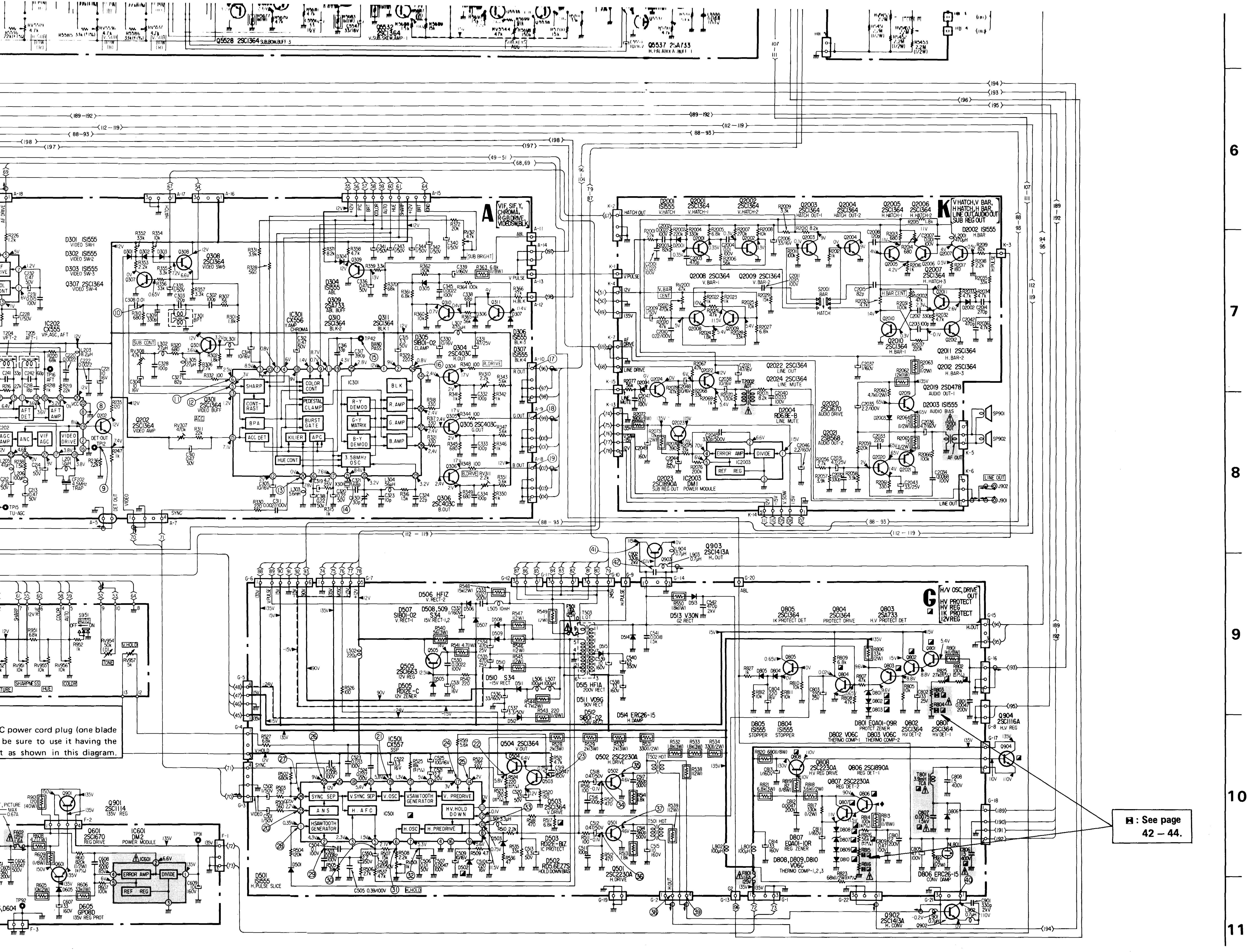


MEASURED USING VTVM	
CHANNELS	VOLTAGE
VHF 2CH ~ 6CH	3V ~ 20V
VHF 7CH ~13CH	25V ~ 20V
UHF 14CH ~83CH	13V ~ 27V

CAUTION:
This set is equipped with a polarized AC power cord plug (one blade of the plug is wider than the other), be sure to use it having the specified part number and connect it as shown in this diagram.



A
VIF, SIF, Y, CHROMA, R-G-B DRIVE, VIDEO SW, BLK
K
V HATCH, V BAR, H HATCH, H BAR, LINE OUT, AUDIO OUT, SUB REG OUT
G
H/V OSC, DRIVE, OUT, HV PROTECT, HV REG, IK PROTECT, 12V REG
IC202 CX555 VIF, AGC, AFT
IC301 CX556 Y AMP CHROMA
IC501 CX557 SSP
IC601 DM2 POWER MODULE
IC2003 DM1 POWER MODULE
Q202 2SC1364 VIDEO AMP
Q301 2SC1364 VIDEO BUFF
Q304 2SC403C R OUT
Q305 2SC403C G OUT
Q306 2SC403C B OUT
Q308 2SC1364 VIDEO SW-5
Q309 2SA733 ABL BUFF
Q310 2SC1364 BLK-2
Q311 2SC1364 BLK-1
Q502 2SC2230A H DRIVE
Q503 2SC1364 V DRIVE
Q504 2SC1364 V OUT
Q505 2SC1663 12V REG
Q601 2SC1670 REG DRIVE
Q901 2SC1114 135V REG
Q902 2SC1413A H. CONV
Q903 2SC1413A H. OUT
Q904 2SC1116A H.V REG
Q803 2SA733 H.V PROTECT DET
Q804 2SC1364 PROTECT DRIVE
Q805 2SC1364 IK PROTECT DET
Q2019 2SD478 AUDIO OUT-1
Q2020 2SC1670 AUDIO DRIVE
Q2021 2SB568 AUDIO OUT-2
Q2022 2SC1364 LINE OUT
Q2024 2SC1364 LINE MUTE
Q2023 2SC1890A SUB REG OUT
COLOR CONT
PEDESTAL CLAMP
BURST GATE
R-Y DEMOD
G-Y MATRIX
B-Y DEMOD
R. AMP
G. AMP
B. AMP
BLK
3.58MHz OSC
KILLER
APC
ACC DET
BPA
SHARP
CONT-RAST
HUE CONT
SYNC SEP
V.SYNC SEP
V. OSC
V.SAWTOOTH GENERATOR
V. PREDRIVE
ANS
H. AFC
H.V. HOLD DOWN
H.SAWTOOTH GENERATOR
H. OSC
H. PREDRIVE
ERROR AMP
DIVIDE
REF REG
SP901
SP902
LINE OUT
J902
J901
C power cord plug (one blade
be sure to use it having the
t as shown in this diagram.
: See page 42 – 44.
6
7
8
9
10
11

SONY®

CIRCUIT DESCRIPTION

COLOR VIDEO PROJECTION SYSTEM (KP-5020/7220)

1980, November

KP-1

SONY CORPORATION
TV & CONSUMER VIDEO DIVISION
OSAKI-SP

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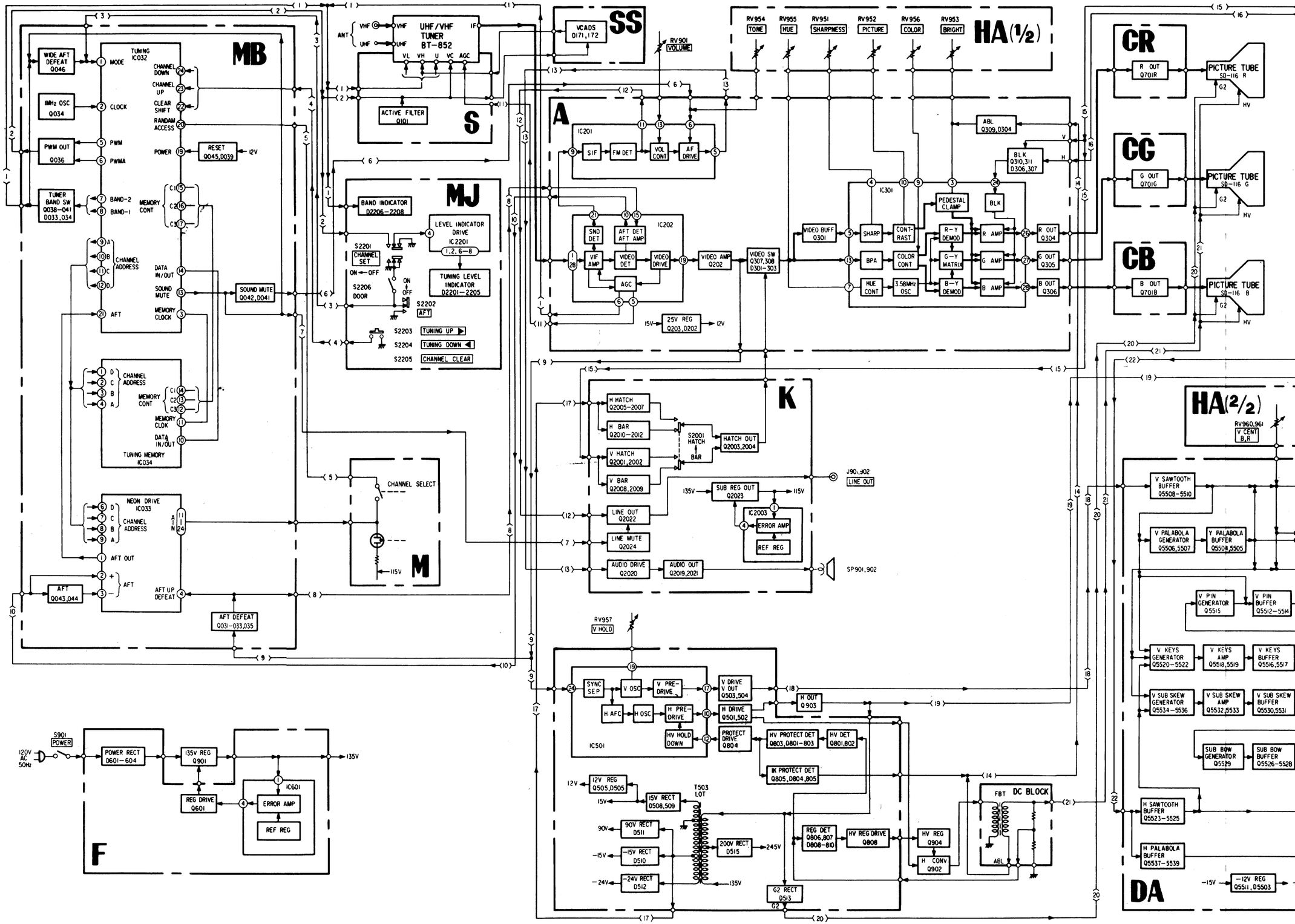
1. OUTLINE

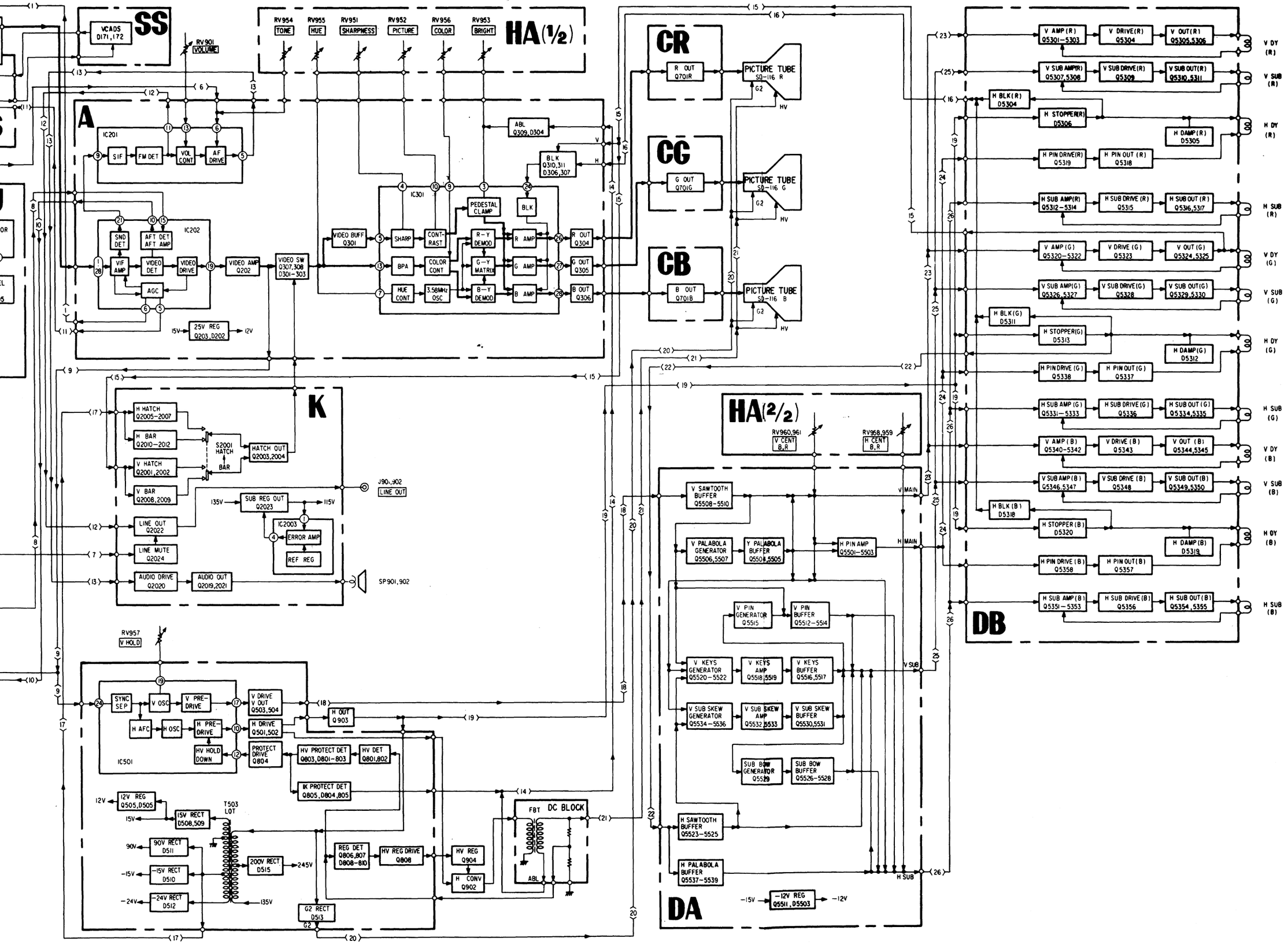
This color video projection system has three lenses and three picture tubes, thus it is necessary to contain three deflection circuits and three video out circuit for red, green and blue.

Most of the circuits (tuning, VIF, SIF, Y, CHROMA, H OSC, V OSC and power supply circuits) of this set are same as that of the alpha chassis color TV.

This circuit description is provided for each board as follows.

1-1 BLOCK DIAGRAM




SS
VCADS D171,172
RV901 VOLUME
HA(1/2)
RV954 TONE
RV955 HUE
RV951 SHARPNESS
RV952 PICTURE
RV956 COLOR
RV953 BRIGHT
A
IC201
SIF
FM DET
VOL CONT
AF DRIVE
IC202
SND DET
AFT DET AFT AMP
VIF AMP
VIDEO DET
VIDEO DRIVE
AGC
VIDEO AMP Q202
VIDEO SW Q307,308 D301-303
15V
25V REG Q203,D202
12V
ABL Q309,D304
BLK Q310,311 D306,307
IC301
PEDESTAL CLAMP
BLK
VIDEO BUFF Q301
SHARP
CONT-RAST
BPA
COLOR CONT
HUE CONT
3.58MHz OSC
R-Y DEMOD
G-Y MATRIX
B-Y DEMOD
R AMP
G AMP
B AMP
R OUT Q304
G OUT Q305
B OUT Q306
CR
R OUT Q701R
CG
G OUT Q701G
CB
B OUT Q701B
PICTURE TUBE SD-116 R
PICTURE TUBE SD-116 G
PICTURE TUBE SD-116 B
G2
HV
K
H HATCH Q2005-2007
H BAR Q2010-2012
V HATCH Q2001,2002
V BAR Q2008,2009
S2001 HATCH BAR
HATCH OUT Q2003,2004
J901,902 LINE OUT
SUB REG OUT Q2023
135V
115V
IC2003
ERROR AMP
REF REG
LINE OUT Q2022
LINE MUTE Q2024
AUDIO DRIVE Q2020
AUDIO OUT Q2019,2021
SP901,902
HA(2/2)
RV960,961 V CENT B,R
RV968,959 H CENT B,R
RV957 V HOLD
SYNC SEP
V OSC
V PRE-DRIVE
H AFC
H OSC
H PRE-DRIVE
HV HOLD DOWN
IC501
V DRIVE V OUT Q503,504
H DRIVE Q501,502
PROTECT DRIVE Q804
H OUT Q903
HV PROTECT DET Q803,D801-803
HV DET Q801,802
IK PROTECT DET Q805,D804,805
12V REG Q505,D505
15V RECT Q508,509
T503 LOT
90V RECT D511
-15V RECT D510
-24V RECT D512
200V RECT D515
245V
135V
REG DET Q806,807 D808-810
HV REG DRIVE Q808
HV REG Q904
H CONV Q902
FBT
DC BLOCK
ABL
G2 RECT D513
G2
V SAWTOOTH BUFFER Q5508-5510
V PALABOLA GENERATOR Q5506,5507
V PALABOLA BUFFER Q5504,5505
H PIN AMP Q5501-5503
V PIN GENERATOR Q5515
V PIN BUFFER Q5512-5514
V KEYS GENERATOR Q5520-5522
V KEYS AMP Q5518,5519
V KEYS BUFFER Q5516,5517
V SUB SKEW GENERATOR Q5534-5536
V SUB SKEW AMP Q5532,5533
V SUB SKEW BUFFER Q5530,5531
SUB BOW GENERATOR Q5529
SUB BOW BUFFER Q5526-5528
H SAWTOOTH BUFFER Q5523-5525
H PALABOLA BUFFER Q5537-5539
-12V REG Q5511,D5503
-15V
-12V
V MAIN
V SUB
H MAIN
H SUB
DA
V AMP(R) Q5301-5303
V DRIVE(R) Q5304
V OUT(R) Q5305,5306
V SUB AMP(R) Q5307,5308
V SUB DRIVE(R) Q5309
V SUB OUT(R) Q5310,5311
H BLK(R) D5304
H STOPPER(R) D5306
H DAMP(R) D5305
H PIN DRIVE(R) Q5319
H PIN OUT(R) Q5318
H SUB AMP(R) Q5312-5314
H SUB DRIVE(R) Q5315
H SUB OUT(R) Q5316,5317
V AMP(G) Q5320-5322
V DRIVE(G) Q5323
V OUT(G) Q5324,5325
V SUB AMP(G) Q5326,5327
V SUB DRIVE(G) Q5328
V SUB OUT(G) Q5329,5330
H BLK(G) D5311
H STOPPER(G) D5313
H DAMP(G) D5312
H PIN DRIVE(G) Q5338
H PIN OUT(G) Q5337
H SUB AMP(G) Q5331-5333
H SUB DRIVE(G) Q5336
H SUB OUT(G) Q5334,5335
V AMP(B) Q5340-5342
V DRIVE(B) Q5343
V OUT(B) Q5344,5345
V SUB AMP(B) Q5346,5347
V SUB DRIVE(B) Q5348
V SUB OUT(B) Q5349,5350
H BLK(B) D5318
H STOPPER(B) D5320
H DAMP(B) D5319
H PIN DRIVE(B) Q5358
H PIN OUT(B) Q5357
H SUB AMP(B) Q5351-5353
H SUB DRIVE(B) Q5356
H SUB OUT(B) Q5354,5355
DB
V DY (R)
V SUB (R)
H DY (R)
H SUB (R)
V DY (G)
V SUB (G)
H DY (G)
H SUB (G)
V DY (B)
V SUB (B)
H DY (B)
H SUB (B)

2. M, MB, MJ and S Board

2-1 TUNING PROCESSING CIRCUIT

The tuning processing circuit consists mainly of three ICs--IC032, IC033, and IC034. The function of each IC is as follows:

IC032 (Control-1) -- This IC is used to synchronize all the logic operations which take place in the tuning process.

Pin 1 (Mode): The voltage level applied to this pin determines the mode of IC032 as stated below

Pin 1	Mode
12 Vdc	AFT on
6 Vdc	AFT off
0 Vdc	Program

Pin 2 (CLK in): 1 MHz main clock; input is used as a reference for all the logic operations.

Pin 3 (CLK out): 15,625 Hz clock derived from main clock.

Pins 5 and 6 (PWM): Pulse-width modulation signal output. The pulse width of this signal is different for each selected channel. This signal is used to produce the VC voltage for the tuner.

Pins 7 and 8 (Band): Band select output. The logic level at these pins determines the tuning range of the tuner.

Pins 9-12 (Channel Address): Address lines. The four address lines developed by IC032 identify the 14-channel location.

ADDRESS LINES		A	B	C	D
14 CHANNEL LOCATIONS	A	L	L	L	L
	B	H	L	L	L
	C	L	H	L	L
	D	H	H	L	L
	E	L	L	H	L
	F	H	L	H	L
	G	L	H	H	L
	H	H	H	H	L
	I	L	L	L	H
	J	H	L	L	H
	K	L	H	L	H
	L	H	H	L	H
	M	L	L	H	H
	N	H	L	H	H

L = Low = 0 Volts

H = High = 12 Volts

Pin 13 (Sound Mute): A High pulse is developed during Power-on and channel switching.

Pin 14 (DATA I/O): Data input/output line. The digital information corresponding to each channel location is written (stored) into the memory or is read out from the memory through this line.

Pin 15-17 (Memory control): Control lines. The logic level out at these pins controls the logic state of the tuning memory (IC034) write, read, standby, last channel memory, change I/O line to input or output.

Pin 19 (Power on): This pin goes High when the power is turned on. During this time, IC032 reads the last-channel memory from IC034 and tunes it in.

Pin 20 (RA): Random access reset. A High pulse is applied to this pin every time a channel is randomly selected.

Pin 21 (AFT): AFT correction for the PWM signal.

AFT	MODE
12 V	AFT UP
6 V	--
0 V	AFT DOWN

Pin 22
(CLEAR): Normally High level. A low level clears the memory corresponding to the tuned channel location.

Pin 24
(CH UP): Normally High level. A low level pulse tunes in the next higher active channel.

Pin 23
(CH DOWN): Normally High level. A low level pulse tunes in the next lower active channel.

IC033 (NEON DRIVE) -- This IC performs two functions: (a) to drive the channel indicator neon lamps, and (b) to sense if the AFT is tuning up or down.

IC034 (TUNING MEMORY) -- Stores the digital data which is necessary to tune in a channel. The data is stored into the 14 memory locations during programming.

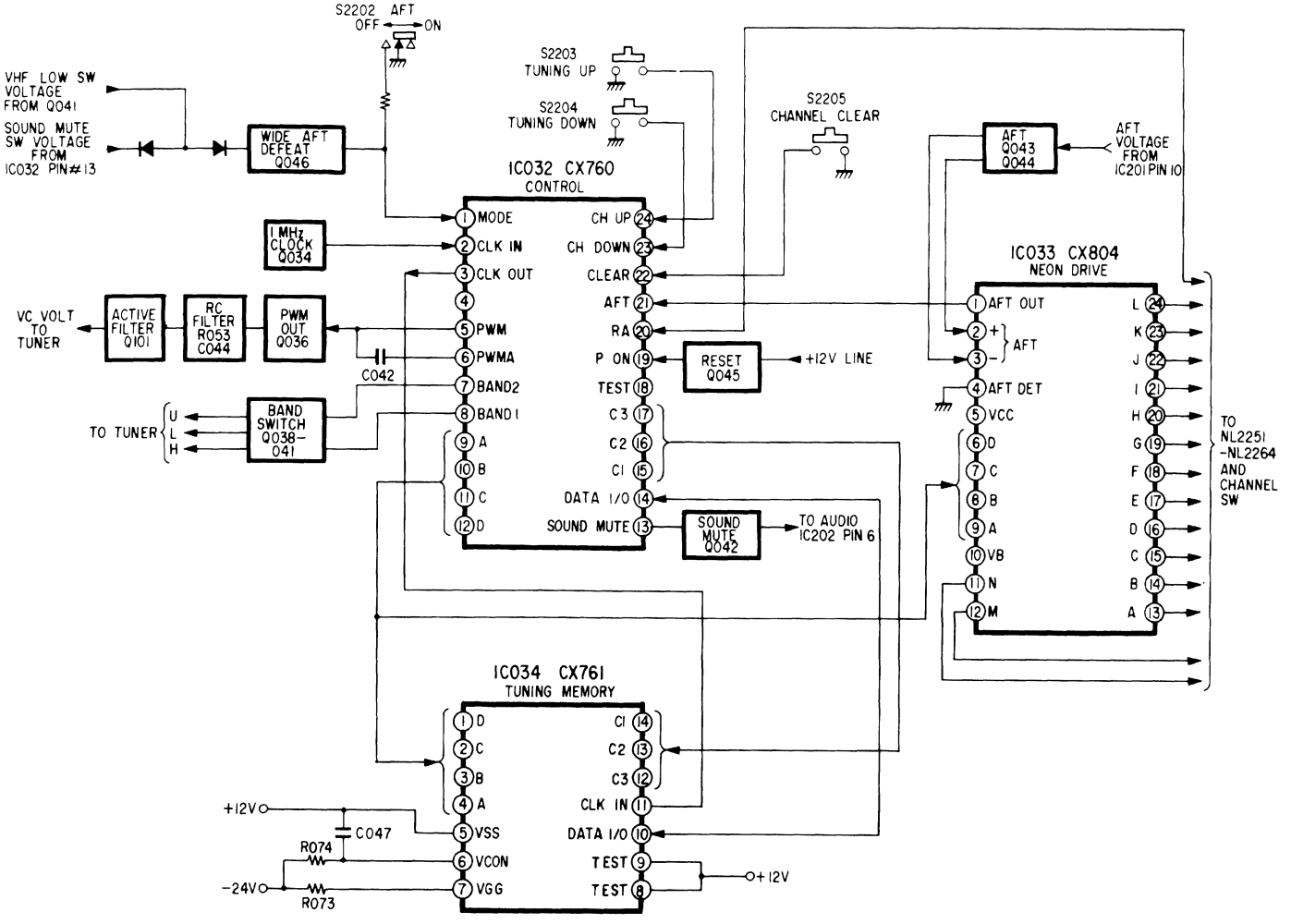


FIG. 1 TUNING PROCESSING CIRCUIT

2-2 TUNER BAND SELECT CIRCUIT

IC032 OUT PUT	BAND		
	VHF-L	VHF-H	UHF
BAND-1	12V	0V	12V
BAND-2	12V	12V	0V

BAND	TUNER TERMINALS		
	VL	VH	U
VHF-L	12V	-12V	0V
VHF-H	12V	12V	0V
UHF	0V	-12V	12V

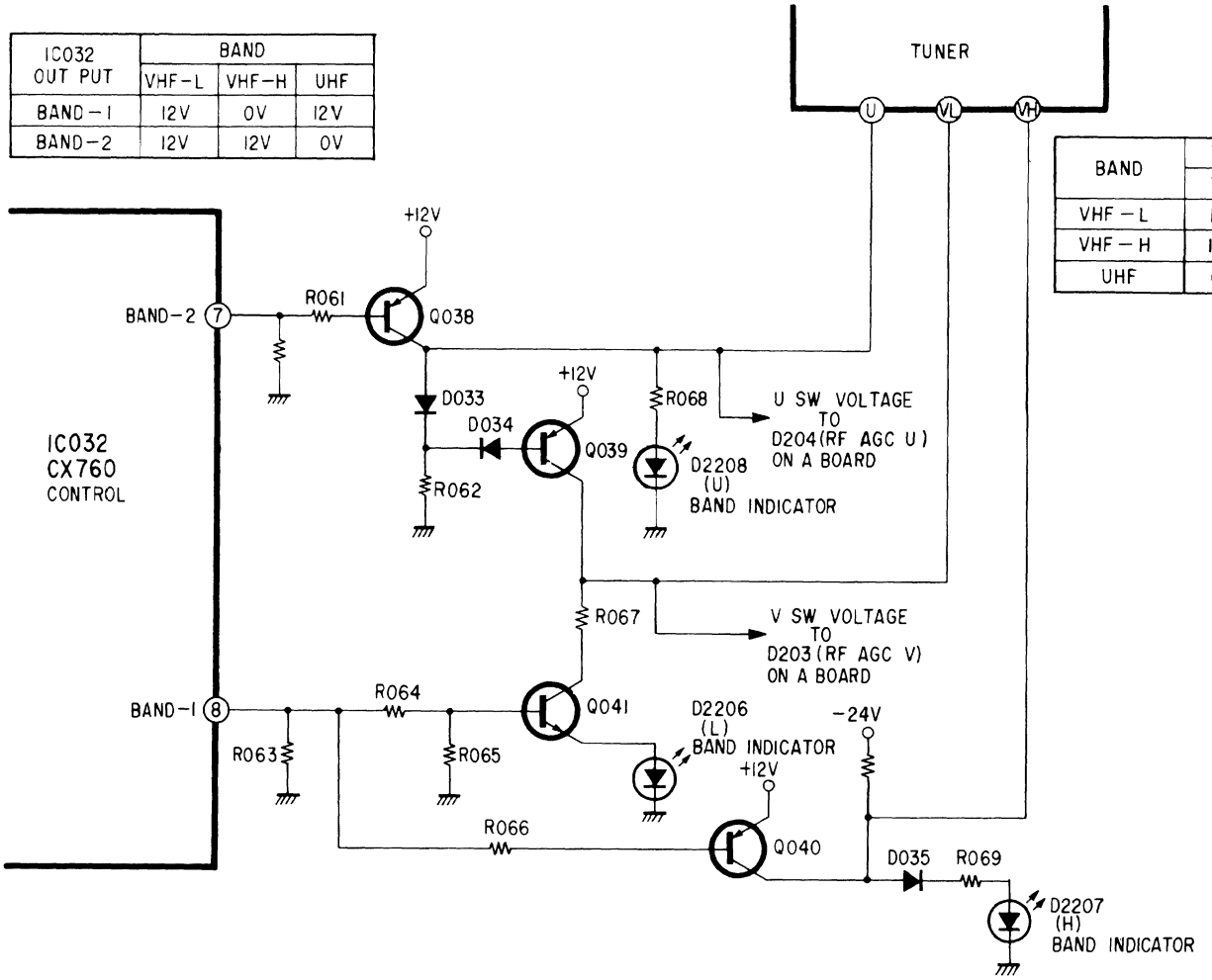


FIG. 2 TUNER BAND SELECT CIRCUIT

2-3 SYNC DET AND STOP CIRCUITS

This circuit consists of Q031, Q032, Q033 and Q035. The purpose of this circuit is to stop the search mode of this system.

The video signal at the DET OUT is amplified by Q031 and the horizontal sync component of this amplified signal turns on Q035 and Q032. The voltage at pin 4 of IC 033 is low, so that the tuning action is stopped. If the video signal at the DET OUT has not appeared, Q032 remains off and the voltage at pin 4 of IC033 is high, and the search mode continues.

C034, L033 and C036 detect the sound signals of other channels and prevent the misoperation of this circuit. when the sound signal of another channel appears at the DET OUT, it turns Q035 and Q032 on. But C034, L033 and C036 which form a filter circuit pass the sound signal and the signal turns Q033 on, applying B+voltage to the pin 4 of IC033. The search mode is thereby continued and the misoperation is prevented.

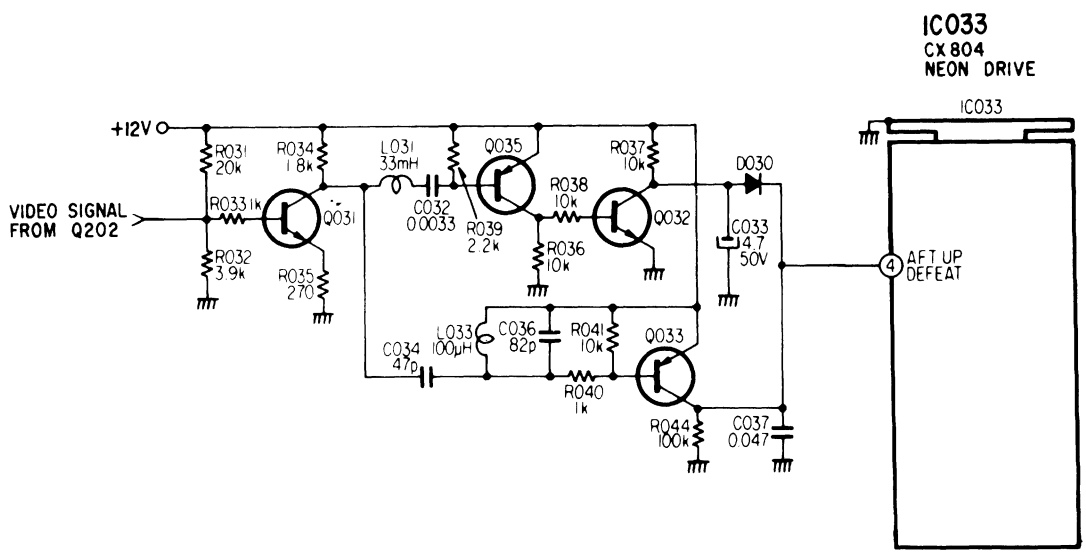


FIG. 3. SYNC DET AND STOP CIRCUITS

2-4 VC PROCESSING CIRCUIT

The tuning frequency of the VHF/UHF tuner is determined by the DC voltage applied to the VC terminal of the tuner. The DC voltage range applied to the tuner for each of the three tuning bands (VHF Low, VHF High, UHF) is shown on the VC processing circuit schematic. This DC voltage is developed by filtering the pulse-width modulation signal provided by IC032 pins 5 and 6.

The PWM signal consists of a series of constant pulses whose pulse width is preset according to the channel selected. A PWM signal with a narrow pulse width will result in a low-level DC voltage after it is filtered; a signal with a wide pulse width will result in a higher DC voltage.

The PWM signal is filtered by an RC network (R053, C044) and by an active filter, Q101. In order to prevent frequency drifts in the tuner, the AFT correction voltage is applied to the VC line of the tuner.

The function of IC2201 and the LEDs connected to its output is to indicate the approximate tuning level within each selected band. This function is used only during the programming mode (channel set on) of the tuning circuits. As the VC voltage applied to pin 4 of IC2201 increases during "tuning up", the number of LEDs that will turn on will also increase. The converse is true during "tuning down". During the nonprogrammable mode (channel set off), IC2201 is disabled by S2201 (CHANNEL SET).

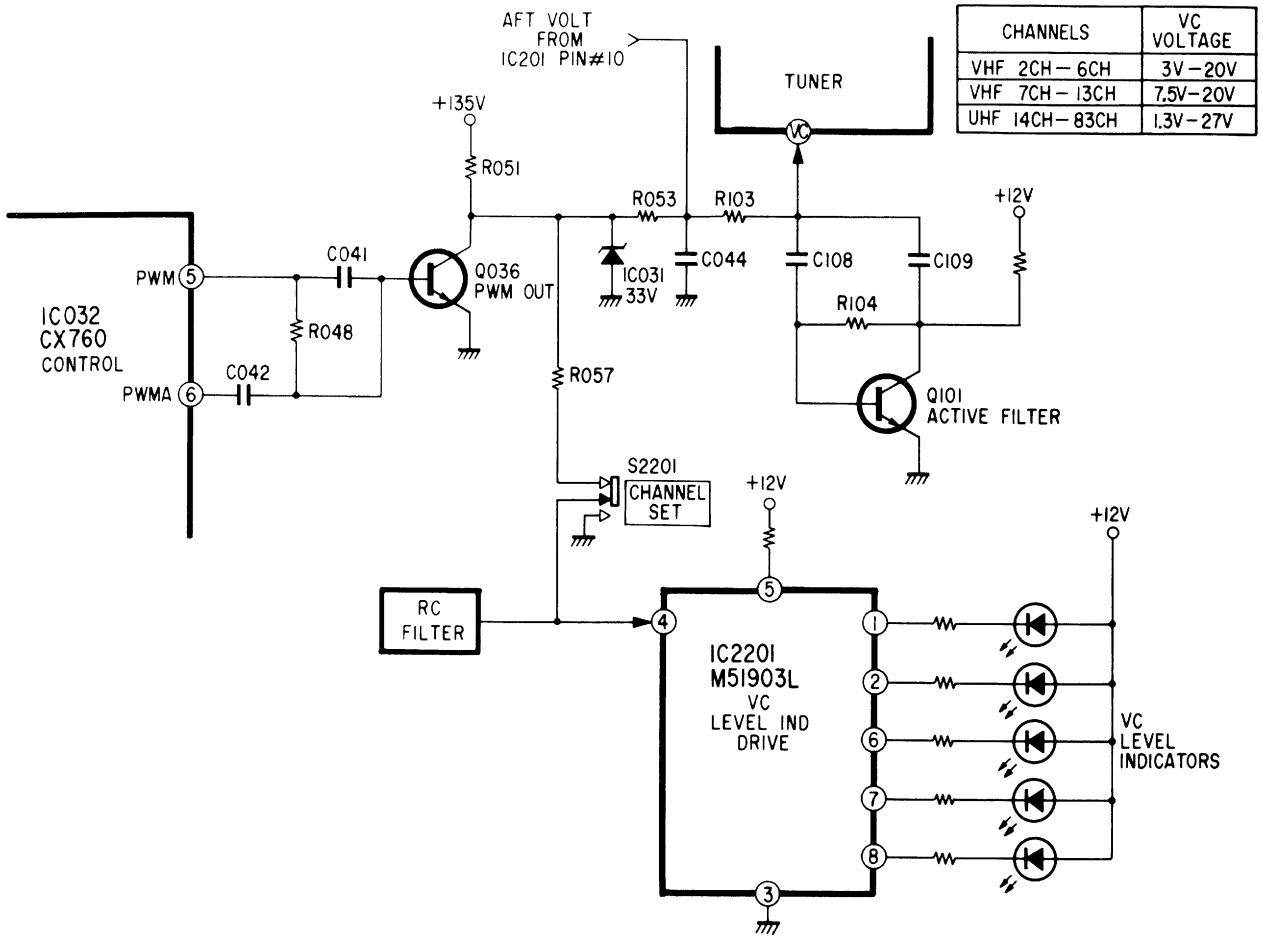


FIG. 4 VC PROCESSING CIRCUIT

3. A BOARD

A board has luminance, chroma processing, VIF, AFT, AGC and SIF circuits.

3-1 LUMINANCE CIRCUIT

The composite video signal from IC202 is delayed and has the chroma trapped out prior to entering IC301 at pin 5. The subcontrast control RV308 adjusts the signal level of the video signal entering the IC.

The first luminance stage in IC301 is the sharpness amplifier. High-frequency peaking is accomplished by L305/C327/R332 off pin 6, and picture sharpness is adjusted by the customer Sharpness control, RV951, which varies the DC voltage applied to pin 4 of the IC.

Next, the luminance signal is amplified by the contrast amplifier. The gain of this amplifier is adjusted by the customer Picture control, RV952, which varies the DC voltage applied to pin 10. This control also varies the gain of the color-control stage.

The pedestal-clamp stage which follows amplifies and clamps the pedestal of the luminance signal to a fixed DC level. This is accomplished by a horizontal pulse coupled from the sync separator (IC501) to pin 20 of IC301. The DC level is filtered by C315 at pin 2 of IC301. The Brightness control (RV953) and sub-brite control (RV312)are connected to the pedestal clamp through pin 3. The ABL line, also connected to pin 3, limits the beam current by reducing the conduction of the pedestal-clamp stage if beam current exceeds normal operation levels.

The luminance signal is then coupled to the RGB amplifiers within IC301. It is here that retrace blanking occurs. The vertical and horizontal blanking pulses are coupled through pin 24 of IC301 to the blanker stage which cuts off the RGB amps during retrace time.

The luminance signal leaves IC301 through pins 26, 27, and 28 where it is coupled to the RGB output stage on the C Board. During a color program, the luminance signal is matrixed with the chroma signal in the R, G, and B amps in IC301 and the RGB signals are coupled to the RGB output stage from pins 26, 27 and 28 of IC301.

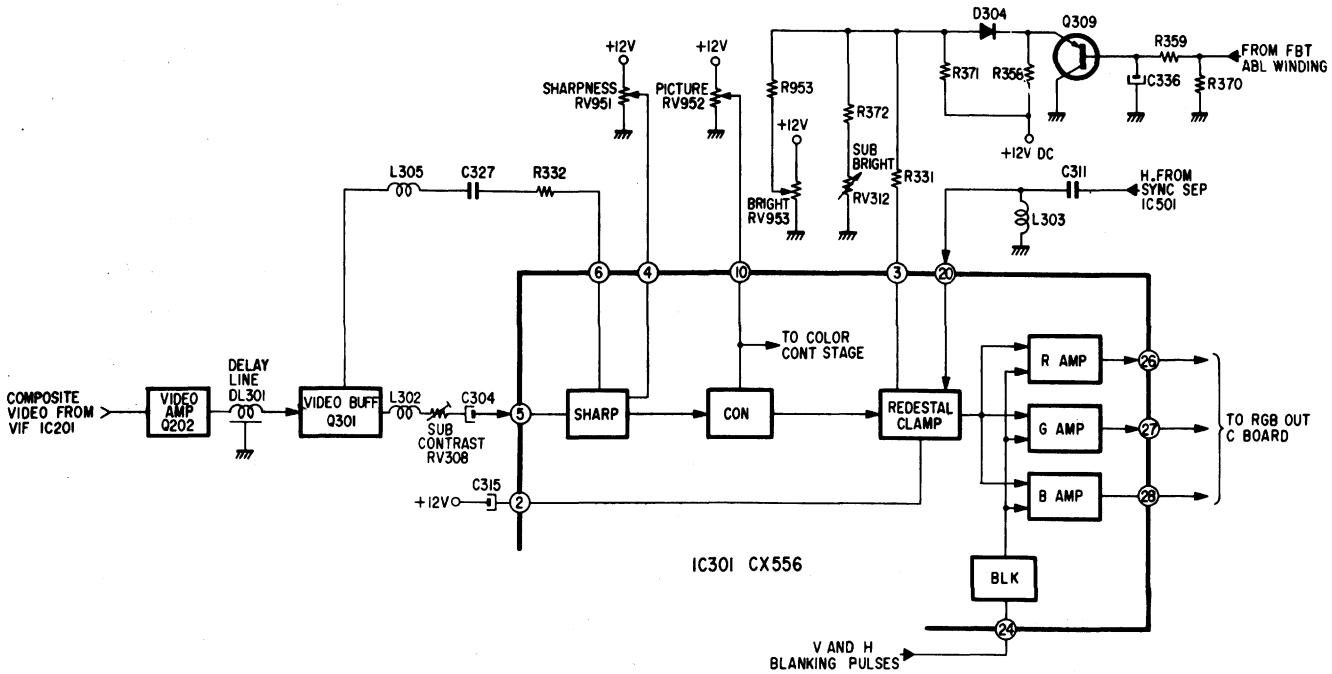


FIG. 5 LUMINANCE CIRCUIT

3-2 CHROMA PROCESSING

The processing of the chroma signal occurs in IC301. The chroma signal is removed from the composite video signal by bandpass transformer (BPT) T301 and enters IC301 at pin 13.

The first chroma stage is the bandpass amplifier (BPA), whose gain is controlled by the ACC detector. The ACC detector receives a sample of the chroma signal from pin 19 of IC301 and uses a horizontal pulse from pin 20 of the IC to remove the burst signal. The ACC detector then varies the gain of the bandpass amplifier with changes in burst amplitude to maintain a constant chroma signal level at its output, this level being determined by the setting of the ACC control RV307.

The next chroma stage is the color-control stage which amplifies the chroma signal and further increases the amplitude of only the burst signal. The additional burst signal amplification is accomplished by the burst-gate stage (B Gate). The burst-gate stage uses a sample of the chroma signal from the bandpass amplifier and a horizontal pulse from pin 20 of IC301 to turn on the B

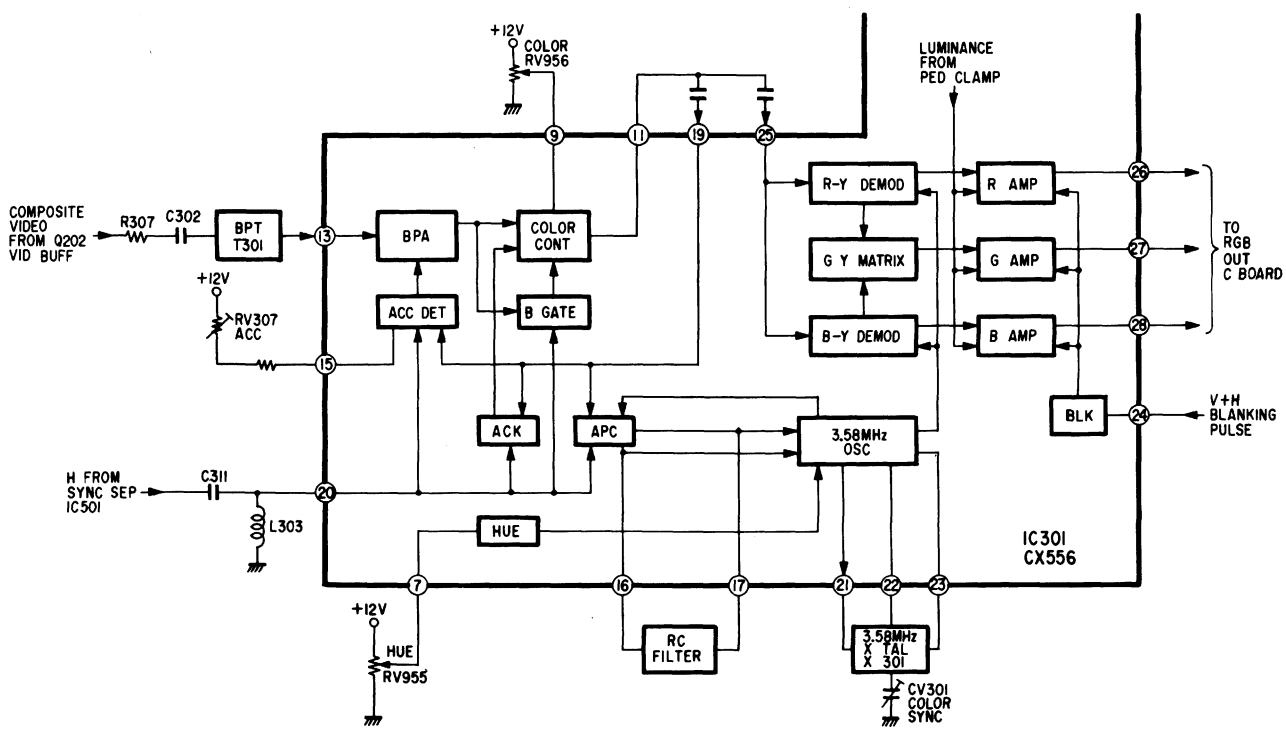


FIG. 6 CHROMA CIRCUIT

Gate at burst time, providing additional gain at the color-control stage at this time. The color-control stage is held off during black-and-white programs by the automatic-color-killer stage (ACK). The ACK stage receives a sample of the chroma signal from pin 19 of IC301 and uses a horizontal pulse from pin 20 of the IC to remove the burst signal. When the burst signal is present (color program), the ACK stage has no effect on the colorcontrol stage; however, when the burst signal is not present (black-and-white program) the ACK stage turns off the color control stage. The chroma signal output of the color-control stage is coupled out of IC301 at pin 11 and into the chroma demodulators at pin 25 of IC301.

The chroma demodulators require two signals: a chroma signal (pin 25, IC301) and a 3.58 MHz CW signal. The 3.58 MHz CW signal is phase and frequency locked to the incoming burst signal and is coupled to the demodulators from the 3.58 MHz crystal oscillator in IC301. The free-running frequency of this oscillator is determined primarily by the 3.58 MHz crystal X301 (pins 21-23 of IC301) and can be adjusted to a small degree by the color-sync control CV301. The 3.58 MHz crystal oscillator is phase and frequency locked to the incoming burst signal by the APC circuit in IC301. The APC circuit receives a sample of the incoming chroma signal from pin 19 of IC301 and uses a horizontal pulse from pin 20 of the IC to remove the burst signal. It then compares the burst signal to a sample of the oscillator CW signal and produces a double-ended correction voltage, filtered at pins 16 and 17, that locks the oscillator on frequency. The 3.58 MHz CW output from the oscillator is coupled to the chroma demodulators in IC301.

IC301 uses two demodulators for chroma demodulation -- an R-Y demodulator and a B-Y demodulator. A protion of each demodulator output is coupled to the G-Y matrix. The three color-difference signals (R-Y, G-Y, and B-Y) are then coupled to the R, G, and B amplifiers in IC301. It is here that the luminance and chroma signals are matrixed to produce the R G B output signals at pins 26, 27, and 28 of IC301.

3-3 VIDEO SWITCH CIRCUIT

D301 through D303 and Q307 form the switch circuit. When the TEST/NORMAL switch is NORMAL position, pin 3 of A-16 connector is 12 V and Q307 goes on. Thus the video signal is supplied to Q308 base through D301 and D302 and the bar or hatch pulse from K Board is cut off by D303.

When the TEST/NORMAL switch is TEST position, pin 3 of A-16 connector is grounded and Q307 goes off. The bar or hatch pulse is supplied to Q308 base and the video signal is cut off.

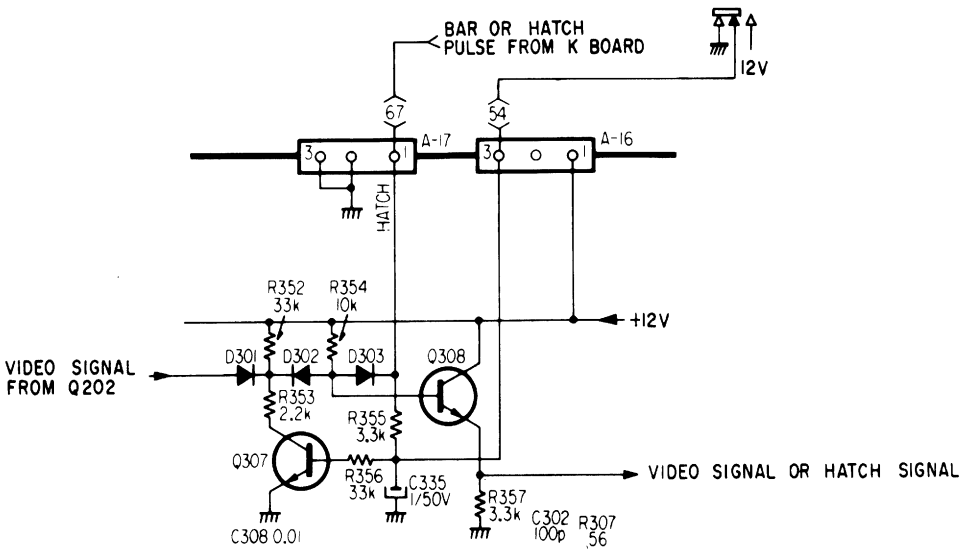


FIG. 7. VIDEO SWITCH CIRCUIT

4. G BOARD

The G board has horizontal and vertical oscillator/drive/output, high voltage protector/regulator, cathode current protector and scan drived voltage supply circuits.

4-1 SYNC SEPARATOR AND DEFLECTION PROCESSING

The following stages are contained in IC501: sync separator, vertical oscillator/sawtooth generator, horizontal oscillator/AFC and high-voltage hold down.

SYNC SEPARATOR

The sync separator stage receives the composite video signal at pin 24 of IC501 and removes the vertical and horizontal sync pulses. An automatic noise cancelling (ANC) circuit is used in conjunction with the sync separator to prevent noise pulses from affecting the sync separator operation. The sync separator uses feedback between pins 22 and 24 of IC501 to increase stability. The output of the sync separator is coupled to the Y-chroma chip IC301 (see Luminance Circuit), as well as to the vertical oscillator and horizontal AFC stage (IC501).

VERTICAL OSCILLATOR/SAWTOOTH GENERATOR

The vertical oscillator/sawtooth generator stage produces the vertical drive signal required for vertical deflection. The oscillator's free-running frequency is determined by C552, R527, and RV957 (V Hold) at pin 19 of IC501. Capacitor C524 (pin 21, IC501) is used to integrate the vertical sync pulse which locks the vertical oscillator on frequency.

The output of the vertical oscillator is shaped into a sawtooth waveform by the IC internal circuitry in conjunction with capacitor C521 at pin 13 of the IC. The vertical sawtooth is amplified by the vertical output stage. Feedback from the vertical output stage is coupled through pin 14 (IC501) to the vertical pre-drive stage in order to maintain uniform vertical linearity.

HORIZONTAL OSCILLATOR/AFC

The horizontal oscillator (IC501) has a free-running frequency determined by C506 and C507 at pin 7, as well as R508 and RV501

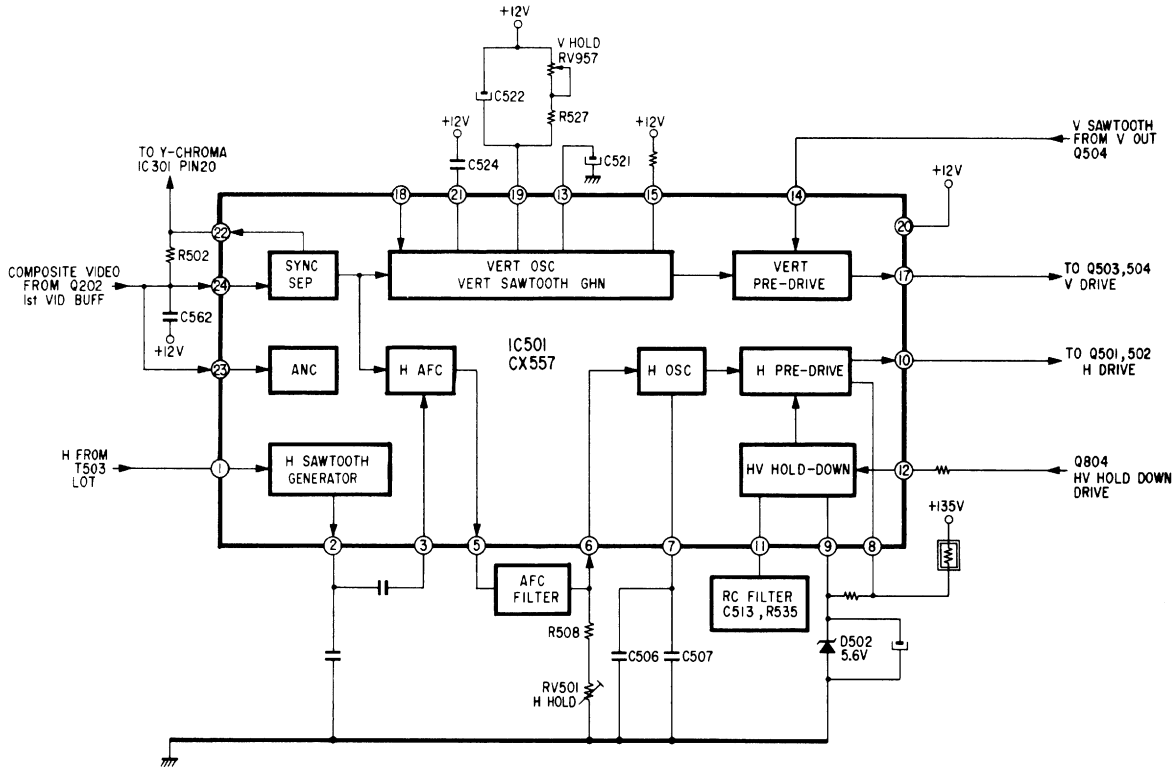


FIG. 8 VERTICAL/HORIZONTAL OSCILLATOR AND HV HOLD- DOWN CIRCUIT

(H Freq.) at pin 6 of the IC. The frequency of the horizontal oscillator is synchronized to the incoming horizontal sync pulse frequency by the horizontal AFC stage. The horizontal AFC stage (IC501) operates in the following manner. A horizontal pulse from the horizontal output stage is coupled through pin 1, IC501 to the horizontal sawtooth-produce stage where it is shaped into a sawtooth waveform. This horizontal sawtooth waveform is coupled through pins 2 and 3, IC501 to the horizontal AFC stage. The horizontal AFC stage compares this horizontal sawtooth to the incoming horizontal sync pulse from the sync separator stage and produces a DC correction voltage. This DC correction voltage is filtered at pins 5 and 6 of IC501 and is used to synchronize the horizontal oscillator to the incoming horizontal sync pulse. The output of the horizontal oscillator is amplified by the horizontal pre-drive stage and coupled through pin 10, IC501 to the horizontal-output stage.

4-2 HIGH VOLTAGE HOLD DOWN CIRCUIT

The high voltage hold down circuit consists of Q801 through Q804. The divided high voltage from the DC block is supplied to the base of Q801 and the proportional voltage is obtained at Q802 emitter. Q803 compares the proportional voltage and the emitter voltage of Q803.

Q803 emitter is biased with the constant voltage by D801 through R806 (D802 and D803 are temperature compensation diodes). When the base voltage of Q803 becomes high, Q803 goes off and the collector voltage of Q803 becomes low, then Q804 goes off. The current from the 15V line charges up C803 through R809 and the voltage at pin 12 of IC501 is increased. The DC voltage at pin 12 of IC501 is compared to a 5.6 V reference at pin 12 of IC501 (zener diode D502). When the DC voltage at pin 12 of IC501 goes above the 5.6 V reference, the high-voltage hold down stage in IC501 turns on and it turns off the horizontal pre-drive stage and shuts down the horizontal output pulse. The line voltages generated in T503(LOT) then disappear. R803 and R804 provide a fine adjustment of the dividing voltage.

C801 through C803 eliminate pulse noise and prevent the false operation of the high voltage hold down circuit. C 513 and R535 also prevent the misoperation.

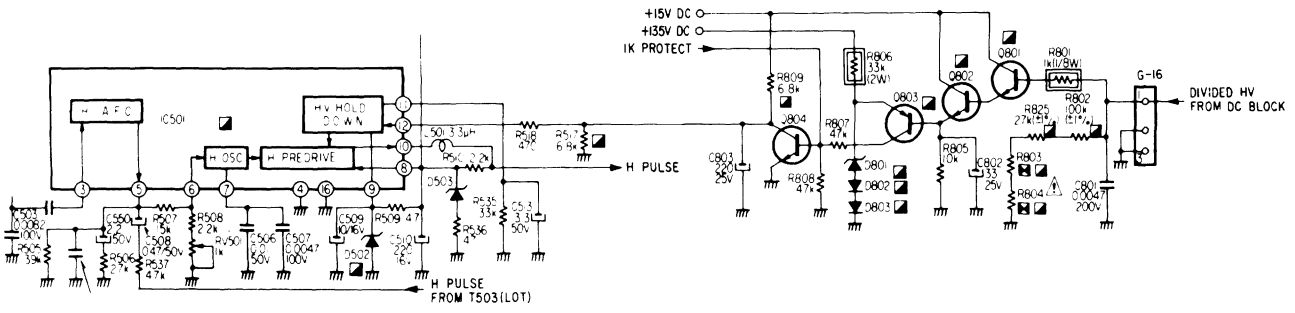


FIG. 9. HIGH VOLTAGE HOLD DOWN CIRCUIT

4-3 IK PROTECT CIRCUIT (Cathode Current Protect Circuit)

This circuit consists of Q805, D804 and D805. When the cathode current of the picture tube flows, this current also flows through R822 and the negative voltage apears at R822. If the current is increased, the negative voltage at R822 will increase and supply the Q805 emitter. Q805 will then come on and Q804 turn off. The voltage at pin 12 of IC501 will increase and shut down the horizontal output pulse.

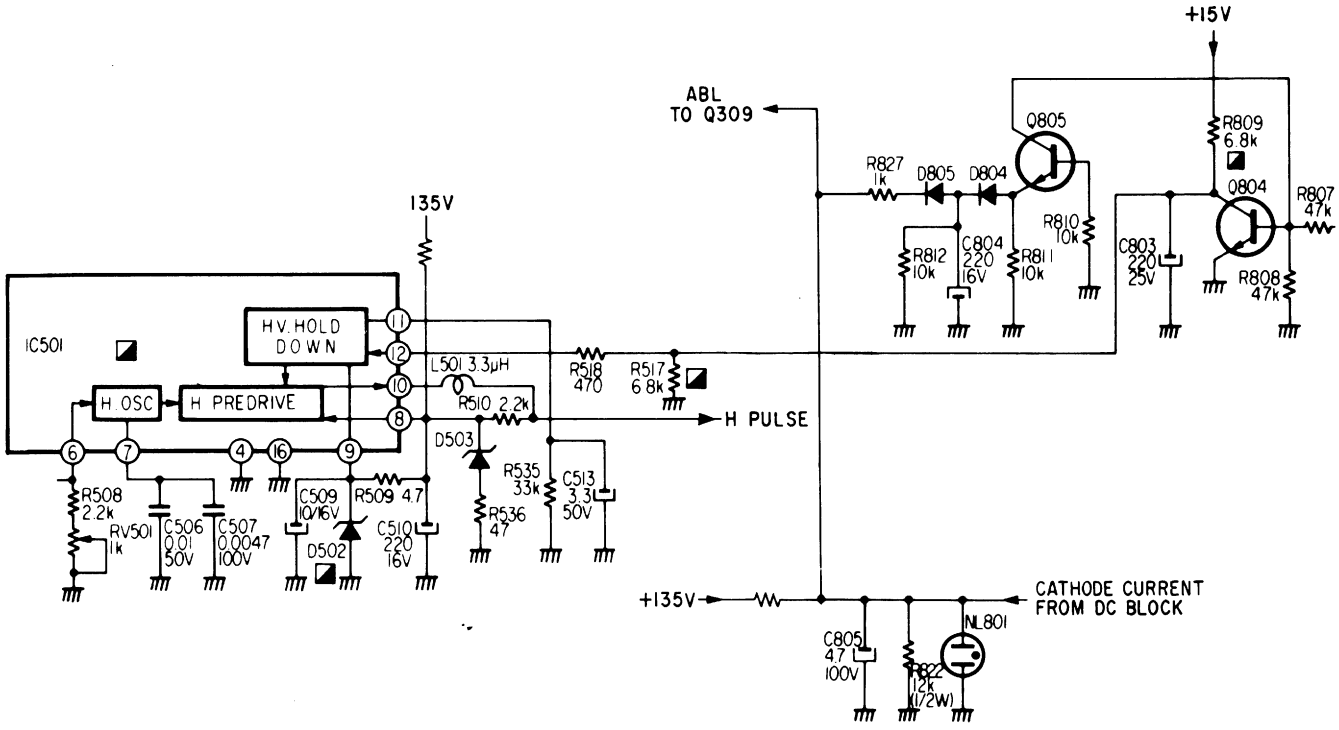


FIG. 10. IK PROTECT CIRCUIT

4-4 HIGH VOLTAGE REGULATOR CIRCUIT

This circuit consists of Q806 through Q808 and Q904 and operates to obtain the constant high voltage for picture tubes.

The divided high voltage at DC block, R814, R826, R815 and R816 is supplied to Q806 base and Q807 emitter is biased with a constant voltage by D807 through D810. (D809 and D810 are temperature compensation diodes). When the high voltage becomes low, the divided voltage also becomes low. The current to Q806 and Q807 decreases and the voltage at Q807 and Q806 collectors becomes high. The bias voltage of Q808 increases and the drive voltage of Q904 also increases. Thus the convertor pulse at Q902 collector becomes large and the high voltage increases.

D806 is a damper diode and C807 is a resonance capacitor.

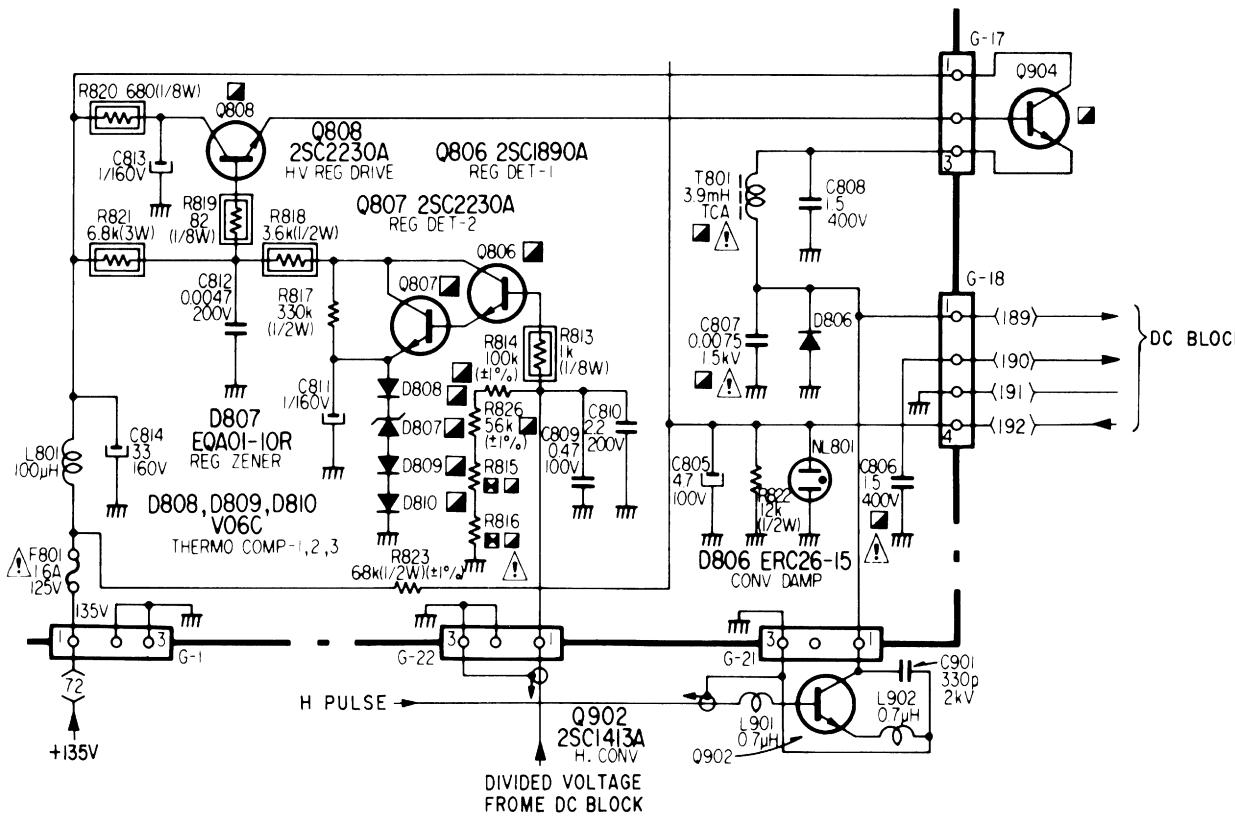
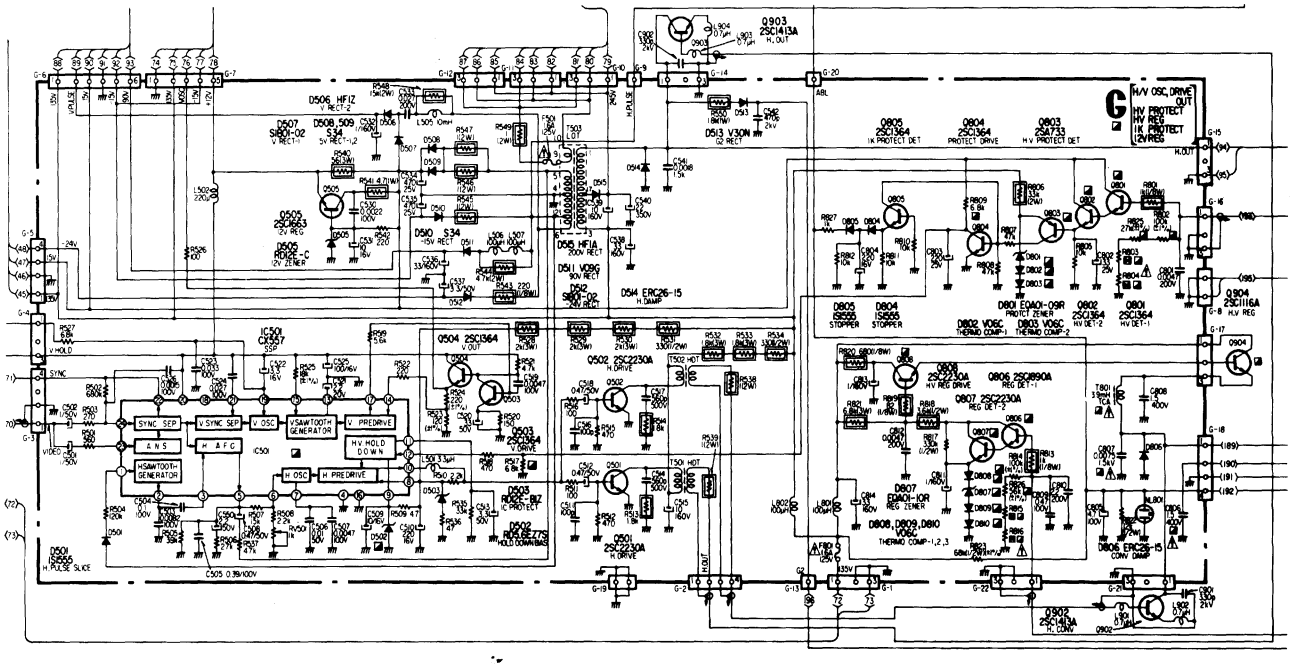


FIG. 11. HIGH VOLTAGE REGULATOR CIRCUIT

4-5 OTHER CIRCUIT

This system has separate horizontal output and high voltage convertor circuits. Q501 and T501 then drive the horizontal output transistor (Q903),and Q502 and T502 drive the high voltage convert transistor(Q902). T503 is a line voltage output transformer and applies ±15 V, +90V, -24 V and +245 V.



GIG. 12. G BOARD

5. K Board

K board has the vertical bar and hatch signal generators, the horizontal bar and hatch signal generators, the audio amplifier for LINE OUT, the sound output amplifier and the 115 V regurator.

5-1 V HATCH GENERATOR

This circuit consists of Q2001 and Q2002.
The vertical sawtooth signal from the vertical amplifier (Q5324 and Q5325) on DB board is used for the signal source.

R2001 and C2001 form a integrator and eliminate the noise component from the input signal.

C2002 and R2002 through R2004 form the differentiation circuit. D2001 applies the negative pulse to Q2001 base. When the negative pulse is applied to the base, Q2001 goes off. The charge current flows to C2003 through R2004.

Q2001 goes on when the charge voltage of C2003 becomes large enough. The negative pulse is then applied to the Q2002 base and Q2002 goes off. The charge current then flows to C2004 through R2007, and Q2002 goes on when the charge voltage of C2004 is large enough.

The negative pulse generated by Q2002 on is supplied to the Q2001 base and Q2001 goes off.

Q2001 and Q2002 go on and off repeatedly according to the time constants of R2004/C2003 and R2007/C2004 and to the vertical trigger pulses.

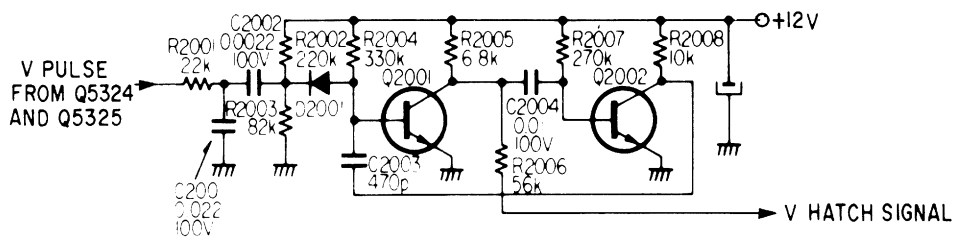


FIG. 13. V HATCH GENERATOR

5-2 V BAR GENERATOR

This circuit consits of Q2008 and Q2009. The DC component of the input vertical sawtooth signal is cut in C2009. The negative and positive going lines of the vertical sawtooth signal become slanted through the integrator consisting of C2010 and R2020.

Q2008 comes on when the base voltage is high enough to apply the sawtooth signal. The charged energy of C2010 then flows to ground through Q2008 base and Q2008 goes to off. Thus the collector voltage of Q2008 rises and the base voltage of Q2009 rises, so Q2009 goes, on and Q2008 completely cuts off to rise the emitter voltage of Q2009.

The V BAR pulse is supplied from Q2008 collector. R2025 and R2027 supply the bias voltage of Q2009 base and R2028 supplies the bias voltage to Q2008 base. RV2001 establishes the slice level of the input sawtooth signal and the position of the V BAR pulse.

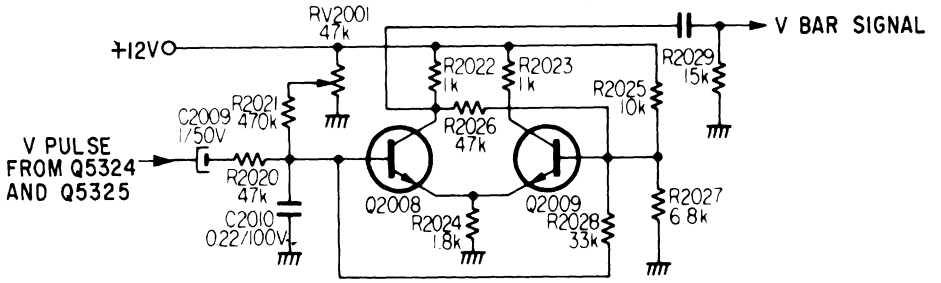


FIG. 14 V BAR GENERATOR

5-3 H HATCH GENERATOR

This circuit consists of Q2005 through Q2007. The horizontal pulse from T503(LOT) on G board is supplied to Q2007 base. Q2007, C2007 and L2001 form the oscillator circuit and generate the sine wave signal triggered by the horizontal pulse.
Q2006 varies the sine wave signal to the pulse signal, and Q2005 establishes the emitter bias of Q2006 and the pulse width.

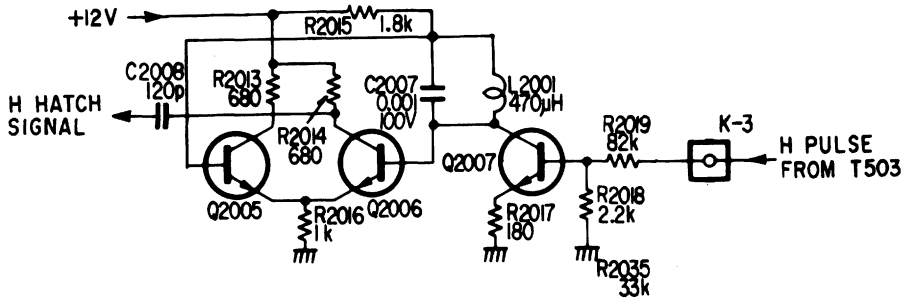


FIG. 15 H HATCH GENERATOR

5-4 H BAR GENERATOR

This circuit consists of Q2010 through Q2012. The level of the input horizontal pulse is lowered in R2035 and R2036. The noise component is eliminated in C2042. The input pulse is integrated in C2014 and R2034, and the negative going pulse is only applied to Q2011 base by D2002. The off-pulse of Q2011 is supplied to

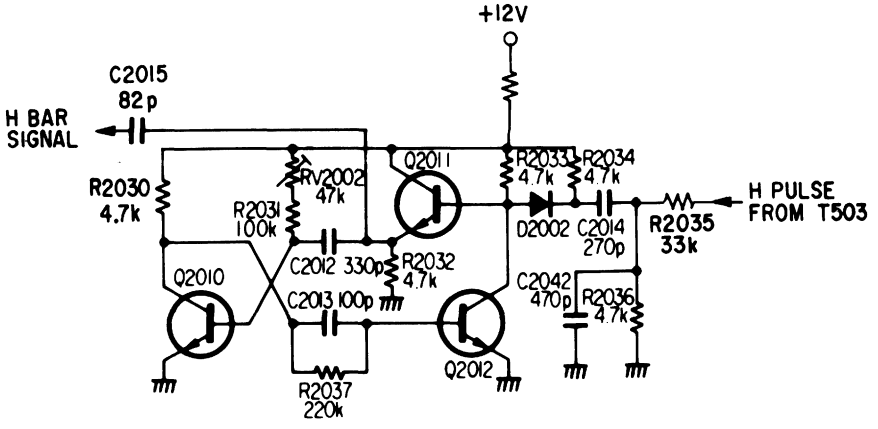


FIG. 16 H BAR GENERATOR

Q2010 base, then Q2010 goes off. The off-pulse of Q2010 is then supplied to Q2012 base then Q2012 goes on. Then the base of Q2011 remains at low voltage.

C2012 is charged through RV2002 and R2031, and Q2010 goes on when the charged voltage become large enough. Thus the on-pulse of Q2010 is applied to Q2012 base and Q2012 goes off while Q2011 goes on. The H BAR pulse is obtained at Q2011 collector.

5-5 OUTPUT CIRCUIT OF BAR AND HATCH SIGNALS

Q2003 and Q2004 mix the horizontal and vertical bar or hatch pulse and invert them. The mixed pulse is applied to the video switch circuit on A board.

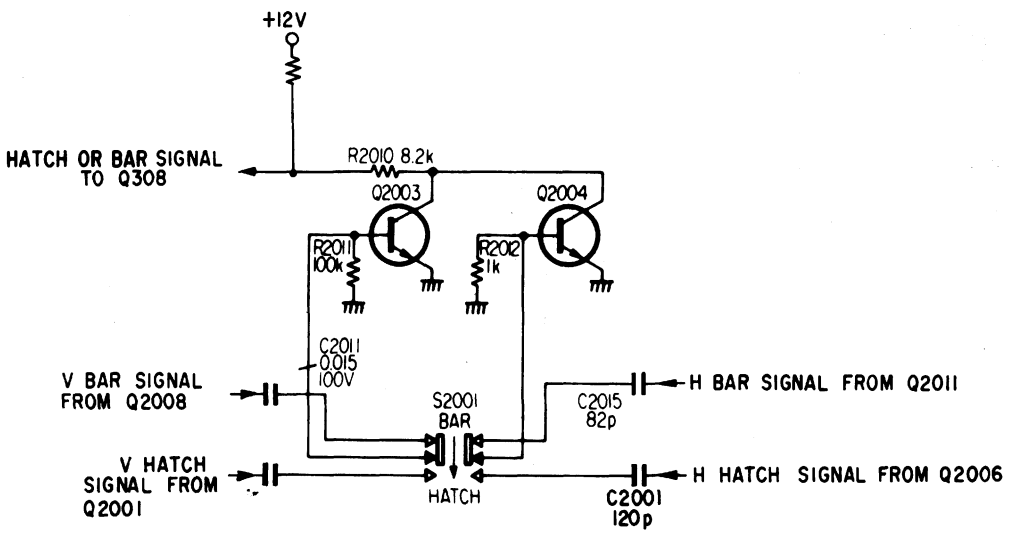


FIG. 17 OUTPUT CIRCUIT

5-6 OTHER CIRCUIT

Q2022 is a emitter follower to drive the line output and T2002 isolates the LINE OUT audio jack.

Q2022 controls the line output signal to eliminate noise when the power is turned on or off.

Q2019 through Q2021 form a SEPP amplifier to drive the speakers. IC2003 and Q2023 supply 115 V for the reference voltage of the horizontal size from the 135V line.

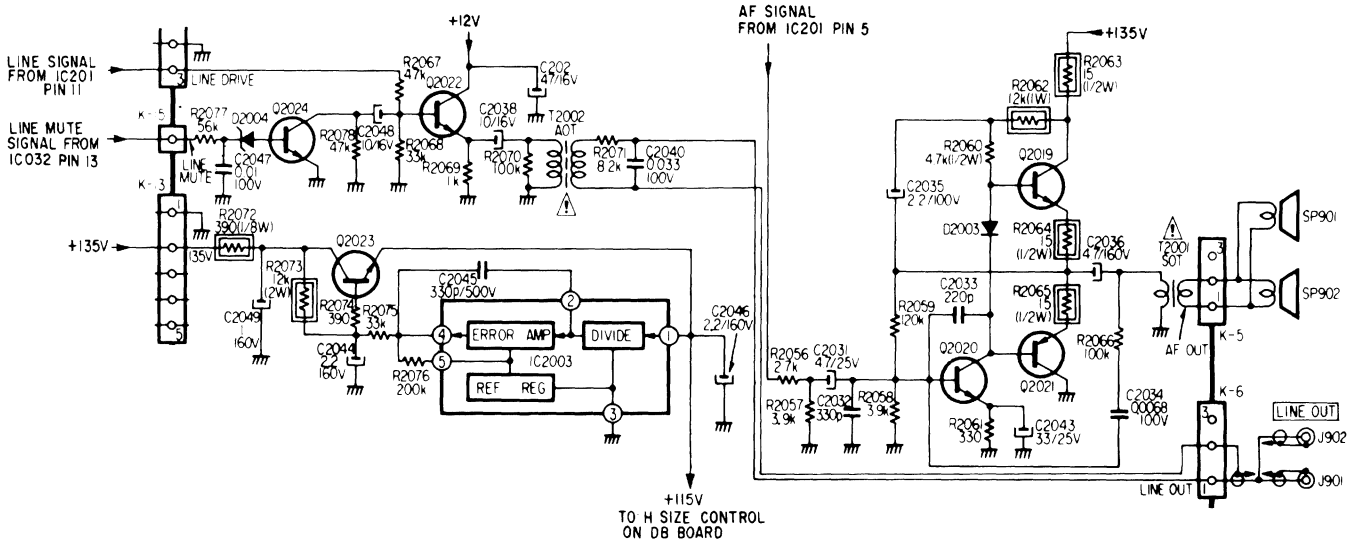


FIG. 18 OTHER CIRCUITS

6. DB Board

DB BOARD has three deflection circuit systems for the red, green and blue beams.

Also each circuit system has four circuits for vertical deflection, vertical sub-deflection, horizontal sub-deflection and horizontal pin-cushion compensation. The compensation signals are also supplied to the the neck assembly for simplifying the compensation circuit. The three circuit systems are same, so only red circuit is described below.

6-1 VERTICAL DEFLECTION CIRCUIT

The vertical deflection circuit consists of 05301 through Q5306 and forms the SEPP (single-ended pushpull) amplifier circuit including two stage differential amplifiers. The input signal is the vertical sawtooth signal compensated V CENT, V SIZE and V LIN.

R5301 applies the bias for Q5301A. C5301 eliminates noise components from the input signal. R5301 and C5303 damp the back emf (electro motive force) of the delfection yoke and stabilize the SEPP amplifier. R5311 through R5313 detect the current flowing in the deflection yoke. The voltage there is supplied to the Q5301B base and improves the linearity of this amplifier. D5301 drives the base bias for Q5305 and Q5306. +135 V and -15 V is applied to Q5301 through Q5304 for driving Q5305 and Q5306 enough. The power supply of Q5305 and Q5306 is +40 V and 15 V.

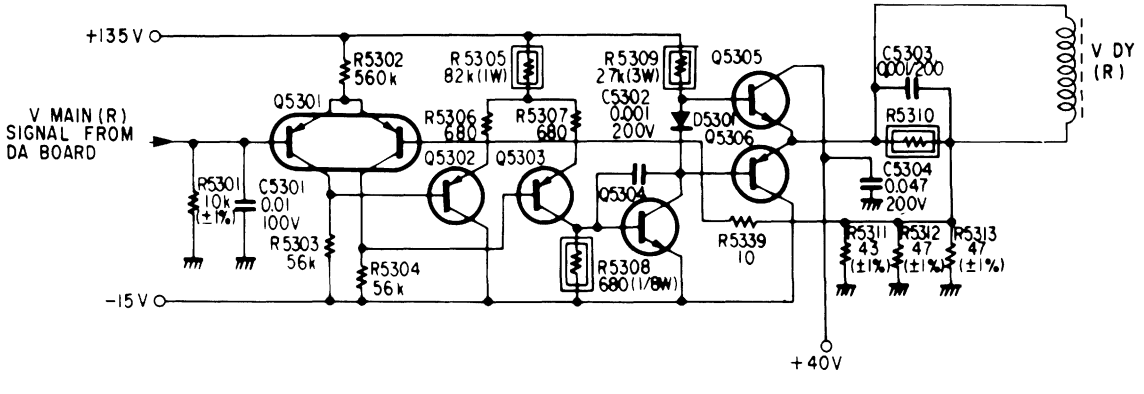


FIG. 19. VERTICAL DEFLECTION CIRCUIT

6-2 VERTICAL COMPENSATION OUTPUT CIRCUIT

This circuit consists of Q5307 through Q5311 and forms the SEPP amprifier circuit including a one stage differential amplifier. The input signal is the compensating signal for V SKEW, V KEYS, V BOW and V PIN to supply the neck assembly coil. C5306 eliminates the noise component from the input signal. R5319 damps the back emf of the neck assembly coil. C5309 cuts the DC component from the correcting current. R5320 and R5321 detect the current flowing in the neck assembly coil and the voltage of R5320 and R5321 is supplied to the Q5308 base for improving the linearity of this amplifier. D5302 drives the base bias of Q5310 and Q5311. POWER supply voltage of this circuit is +135 V.

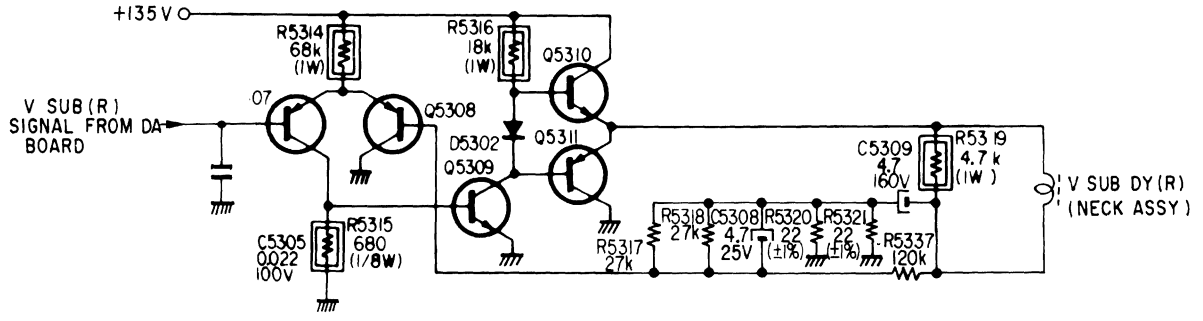


FIG. 20 VERTICAL COMPENSATION OUTPUT CIRCUIT

6-3 HORIZONTAL COMPENSATION OUTPUT CIRCUIT

This circuit consists of Q5312 through Q5317 and forms the SEPP amprifier circuit including the two stage differential amplifiers. The input signal is the compensating signal for H CENT, H LIN, H SKEW, H SUB SKEW, H BOW and H SUB BOW to supply the neck assembly coil. R5322 drive the base bias of Q5312A. C5310 eliminates the noise component from the input signal. R5330 and C5319 damp the back emf of the neck assembly coil. R5331 through R5333 detect the current flowing in the neck assembly coil and the voltage across them is supplied to the Q5312B base for improving the linearity of this amplifier. D5303 drives the base bias of Q5316 and Q5317. Power supply voltage of this circuit is ±15 V.

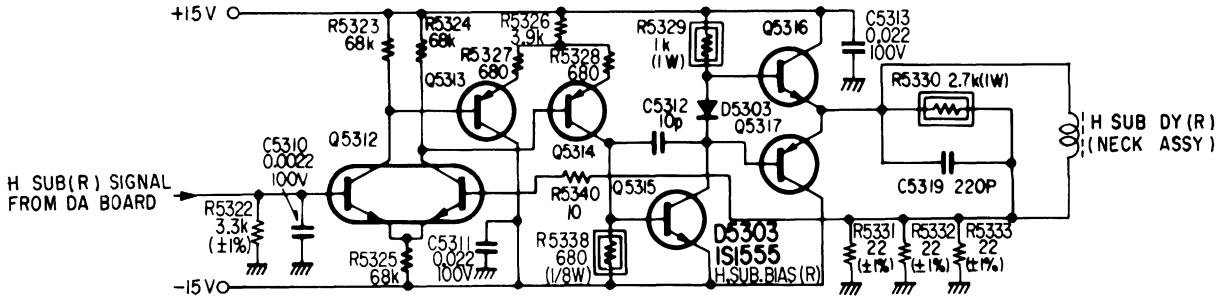


FIG. 21 HORIZONTAL COMPENSATION OUTPUT CIRCUIT

6-4 PINCUSHION AMPLIFIER AND HORIZONTAL OUTPUT CIRCUIT

The pincushion amplifier consists Q5318 and Q5319 for controlling the current in the deflection yoke. The input signal is the composite signal of the bias voltage for H SIZE with H PIN and H KEYS correction signals. C5315 is filter capacitor. L5301, R5336 and C5316 privent the resonance of the deflection yoke, T5301 (horizontal output transformer: HOT) and C5315, triggered by the vertical blanking pulse.

T301 and D5304 generate the horizontal blanking pulse for the blanking circuit on A board.

Power supply voltage of the pincushion amplifier is +90 V.

The horizontal output circuit consists of Q903 and D5306.

D5306 absorbs the reaction between deflection yokes and permits driving three deflection yokes with one transistor.

D5306 is completely off in the blanking period.

D5305 is a clamper and C5317 is a resonance capacitor.

C5318 compensates the S curve distortion of the deflection and cuts the DC component.

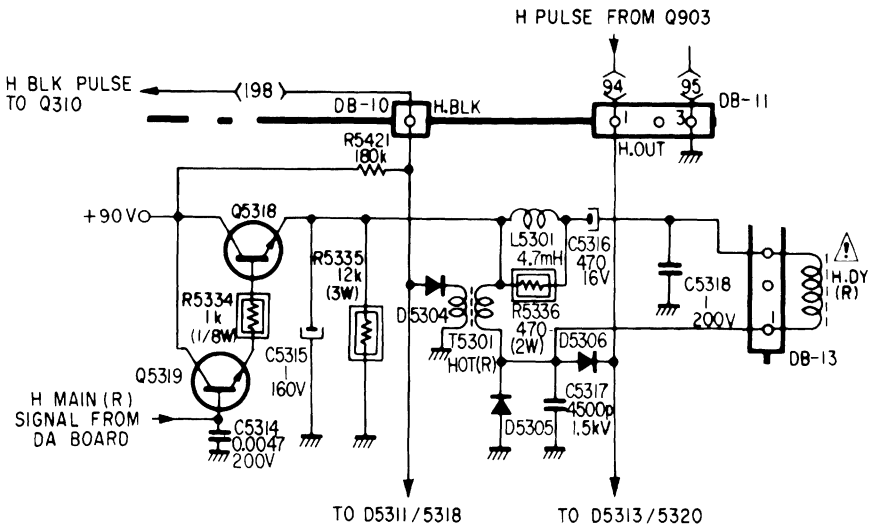


FIG.22 PINCUSHION AMPLIFIER AND HORIZONTAL OUTPUT CIRCUIT

7. DA BOARD

DA board has generator circuits triggered by the compensation signal for the vartical and horizontal registration, and also has variable resistors for adjustment.

7-1 V SAWTOOTH BUFFER

This circuit consists of Q5508 through Q5510.
Q5510 is a phase inverter to obtain the same level inverted and non-inverted sawtooth signal at the collector and emitter.
Q5508 and Q5509 are emitter followers. R5638 is a bias resistor and C5522 eliminates the noise component of input sawtooth signal.
The two sawtooth signals are used for the vertical deflection and to compensate the V SIZE, H SKEW and H KEYS.

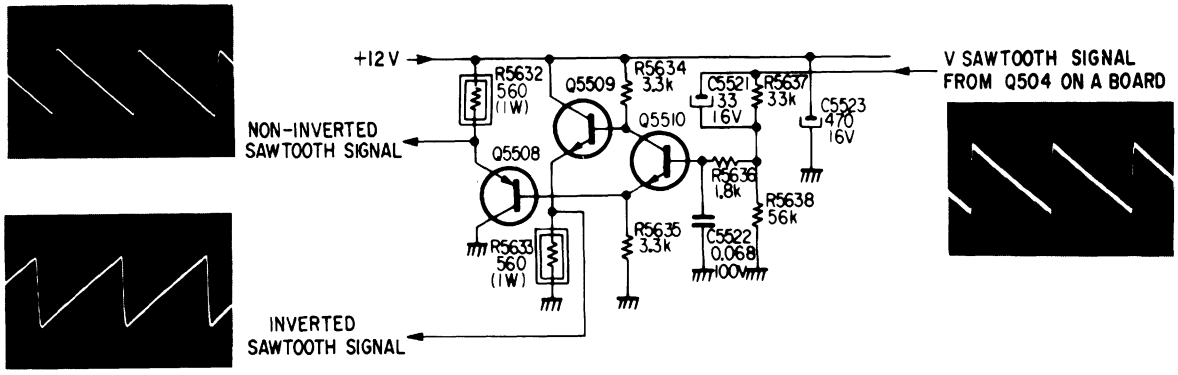


FIG.23 V SAWTOOTH BUFFER

7-2 V PALABOLA GENERATOR

This circuit consists of Q5504 through Q5507. Q5506 and Q5507 form the Miller integrator to convert the sawtooth waveform into the palabola waveform. Q5505 is a phase inverter to obtain the inverted palabola waveform which is of the same level as the input signal. Q5506 is an emitter follower. R5629 and C5520 are used to obtain the high gain. Q5506 emitter applies the non-inverting palabola signal and Q5504 emitter applies the inverting palabola signal. The two palabola signals are used for V LIN, H BOW and H PIN adjustment.

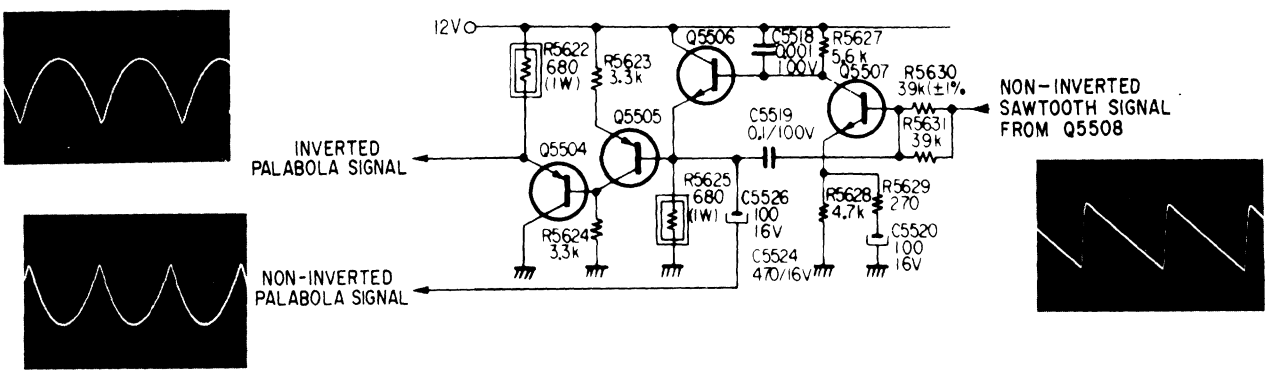


FIG. 24 V PALABOLA GENERATOR

7-3 H PIN AMP CIRCUIT

Q5501, Q5502 and Q5503 are H PIN AMP circuit for blue, red and green pictures.

H KEYS and H PIN compensation signals are added to the H SIZE bias signal in Q5501 and Q5502. C5512, C5514 and C5516 cut the DC component from the compensation signal.

The compensation signal for the green is formed from the fixed H keys signal by R5549 and R5550.

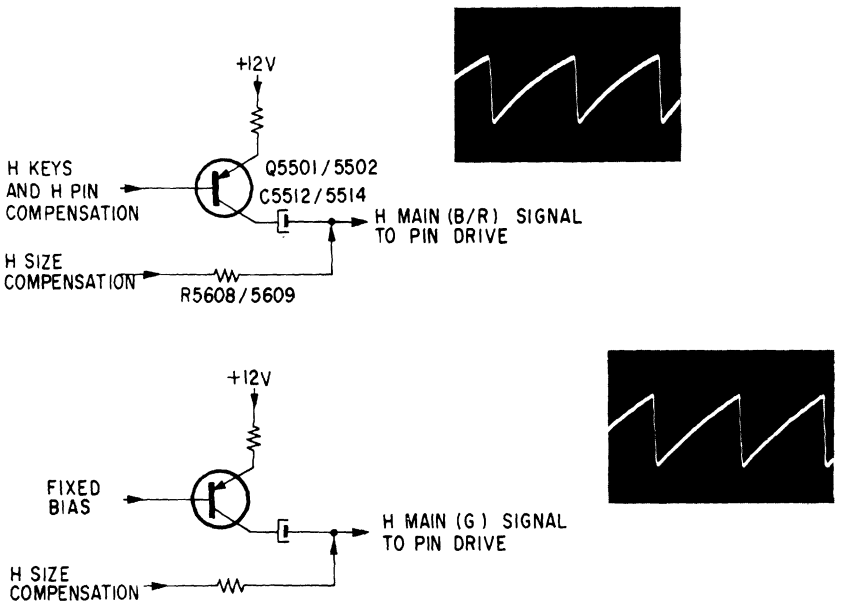
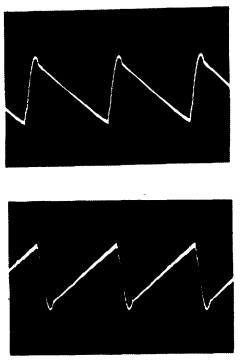


FIG. 25 H PIN AMP CIRCUIT

7-4 H SAWTOOTH BUFFER

This circuit consists of Q5523 through Q5525. The input signal is the negative horizontal pulse from T5302 on DB board and is converted to the sawtooth signal in C5540, C5542 and R5675. Q5525 is a phase inverter to obtain the same level inverted and noninverted sawtooth signal at the collector and emitter. Q5523 and Q5524 are emitter followers. The two horizontal sawtooth signals are used for V SKEW adjustment. R5674 applies the bias to Q5525 base.



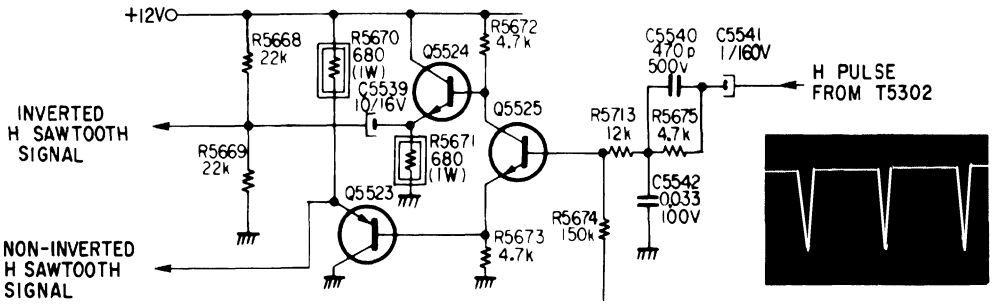


FIG. 26 H SAWTOOTH BUFFER

7-5 H PALABOLA BUFFER

This circuit consists of Q5537 through Q5539.

The horizontal pulse of the input signal is changed to a palabola signal in L5502 and C5555. R 5709 and R5711 furnish the Q5539 base bias. Q5539 is a phase inverter to obtain the same level inverted and non-inverted palabola signal at the collector and emitter. Q5537 and Q5538 are emitter followers. The two horizontal palabola signals are used for V BOW and H LIN adjustment.

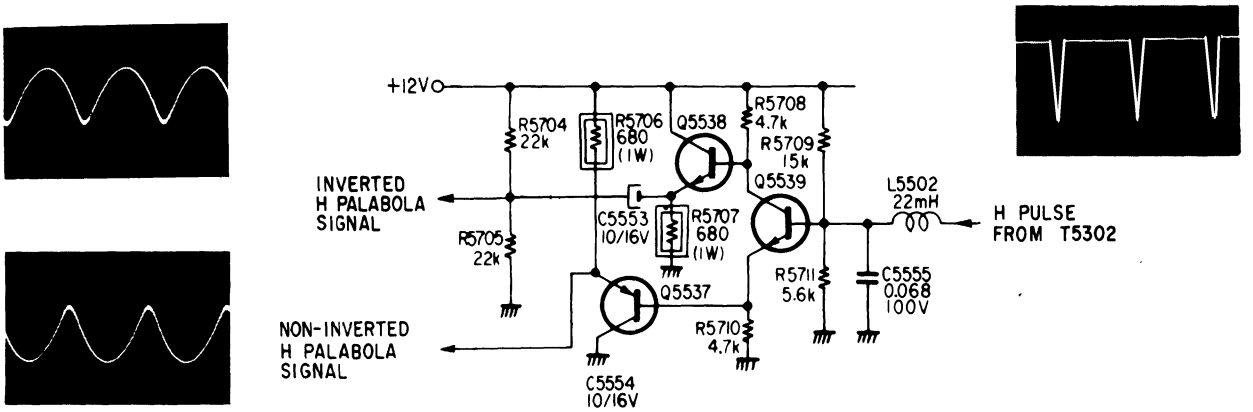


FIG. 27 H PALABOLA BUFFER

7-6 V KEYS GENERATOR

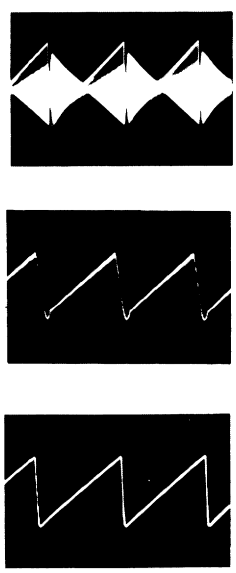
This circuit consists of Q5520, Q5521 and Q5522. The input signals are as follows: The non-inverted vertical sawtooth signal supplied to Q5522 base. The inverted vertical sawtooth signal applied to Q5521 base. The non-inverted horizontal sawtooth signal applied to Q5520A source. The inverted horizontal sawtooth signal applied to Q5520B source. R5666 and R5667 supply the bias to Q5522 base and R5663 supplies the bias to Q5521 base. R5659 through R5662 establish the bias of Q5520 gates. The direction of compensation is different at the upper and lower sides of screen, so four input signals are mixed in this circuit.

In the fast portion of the vertial period, the non inverted sawtooth signal is low level and the inverted sawtooth signal is high level. Q5521 conducts in this time and the collector voltage is low. The collector voltage then becomes to high slowly. Q5522 is cut off and slowly begins to conduct.

At fast, the collector voltage of Q5522 is high and then decreases to low slowly. The output signal of Q5520 drain in the vertical period is as follows.

At fast half period, a large inverted horizontal sawtooth signal is obtained and it slowly decreases to zero.

At last half period, the non-inverted horizontal sawtooth signal becomes large slowly from zero and stops at the end of the vertical sawtooth signal, and the output signal is chenge to the large inverted horizontal sawtooth signal.



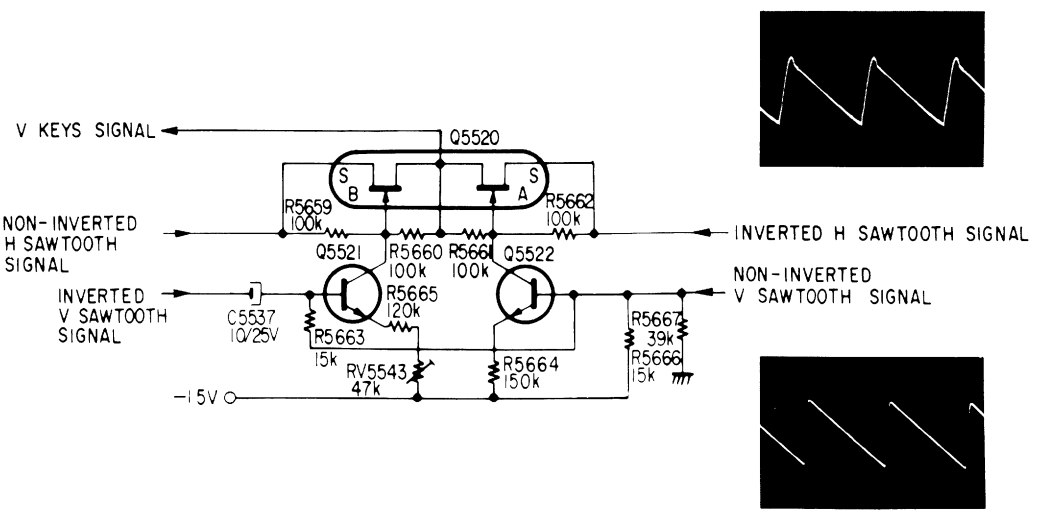


FIG. 28 V KEYS GENERATOR

7-7 V KEYS BUFFER

This circuit consists of Q5516 through Q5519. Q5518 and Q5519 are a phase invertor forming a differential amplifier circuit.

The inverted V KEYS signal is obtained at the collector of Q5519. The level of the two signals is the same.

Q5516 and Q5517 are emitter followers.

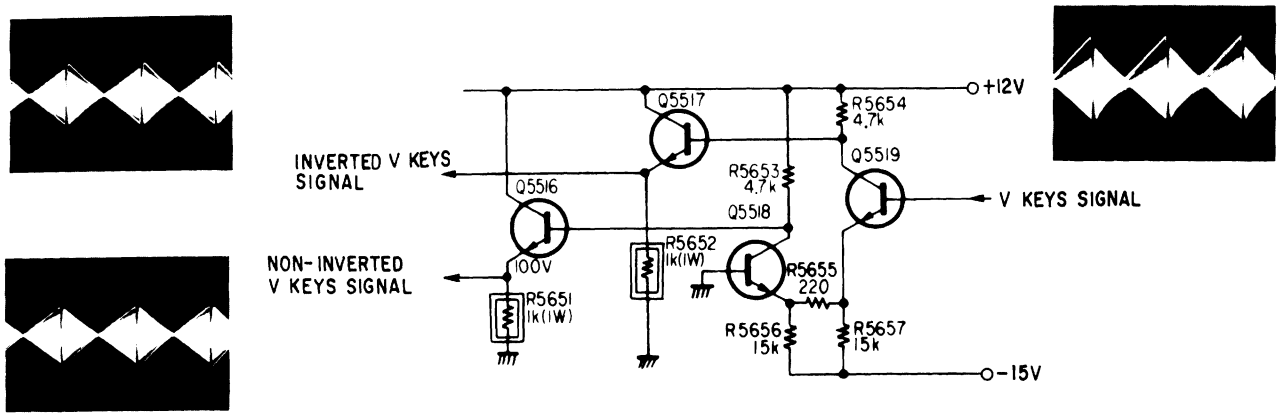


FIG. 29 V KEYS BUFFER

7-8 V PIN GENERATOR

This circuit consists of Q5512 through Q5515. Q5515 and C5532 form a integrator to integrate the horizontal component of the input signal, so that the horizontal sawtooth signal is changed to the palabola signal. The vertical sawtooth wave is supplied to the Q5515 collector to shift the V KEYS signal, so the vertical pincushion correction signal is obtained.

Q5514 is a phase invertor. Q5512 and Q5513 are emitter followers.

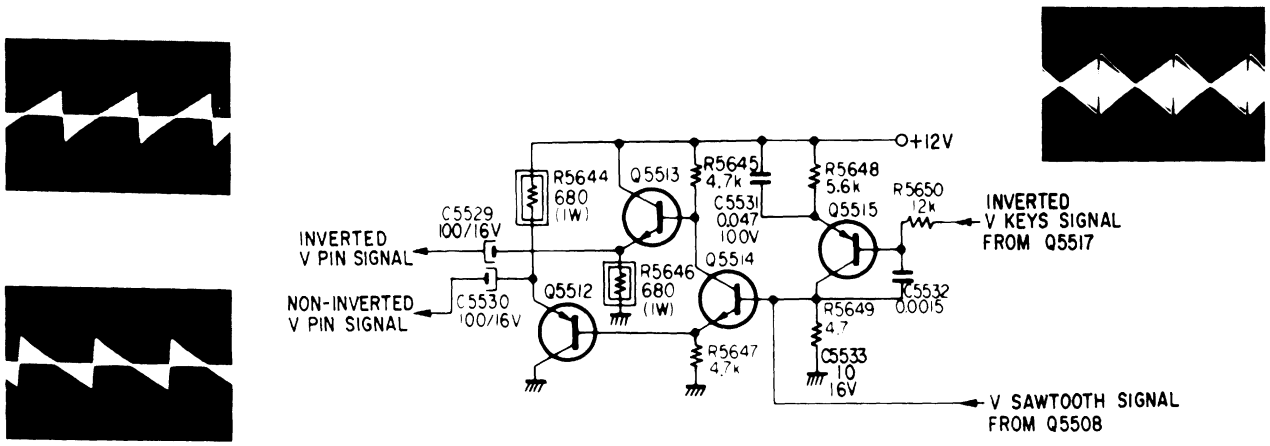


FIG. 30 V PIN GENERATOR

7-9 V SUB SKEW GENERATOR

This circuit consists of Q5534, Q5535 and Q5536.

The input signals are as follows:

The non-inverted vertical palabola signal is applied to Q5536 base. The non-inverted horizontal sawtooth signal is applied to Q5534A source. The inverted horizontal sawtooth signal is applied to Q5534B source. R5700 and R5701 supply the bias to Q5536 base and R5693 through R5696 establish the bias of Q5534 gates. The inverted horizontal sawtooth signal is changed to the amplitude-moduration signal from the inverted vertical palabola signal in Q5534B. C5550 and R5697 supply the fixed bias to Q5535 base. The constant value of the non-inverted horizontal sawtooth signal is obtained at Q5534A drain and adds to the amplitude-moduration signal of the inverted horizontal sawtooth signal.

The purpose of this constant signal is to assure that the middle of the correcting signal does not affect the screen.

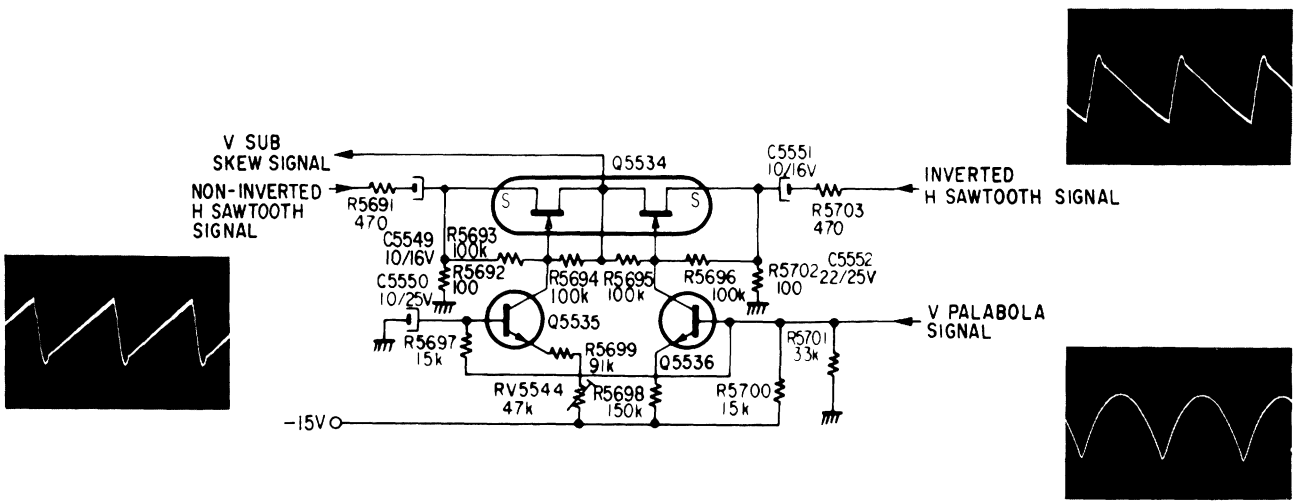


FIG. 31 V SUB SKEW BUFFER

7-10 V SUB SKEW BUFFER

This circuit consists of Q5530 through Q5533. Q5532 and Q5533 are a phase invertor forming a differential amplifier circuit. The inverted V SUB SKEW signal is obtained at Q5532 collector and the non-inverted V SUB SKEW signal at Q5533 collector. The two signals are of the same level.

Q5530 and Q5531 are emitter followers.

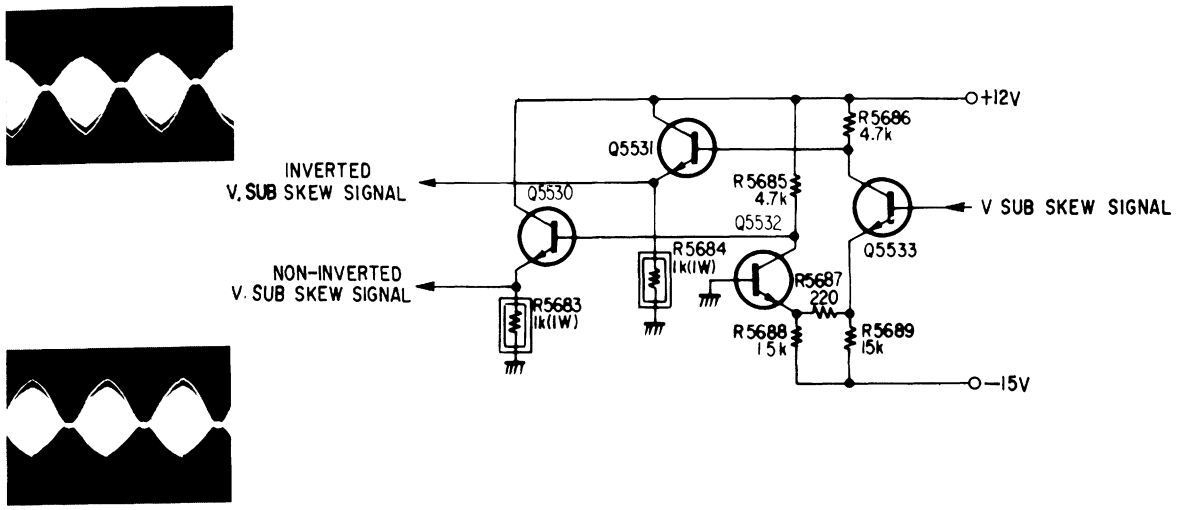


FIG. 32 V SUB SKEW BUFFER

7-11 SUB BOW GENERATOR

This circuit consists of Q5526 through Q5529. Q5529 and C5546 form a integrator to integrate the horizontal component of input signal, so the horizontal sawtooth signal is changed to the palabola signal.

Q5528 is a phase invertor and Q5526 and Q5527 are emitter followers.

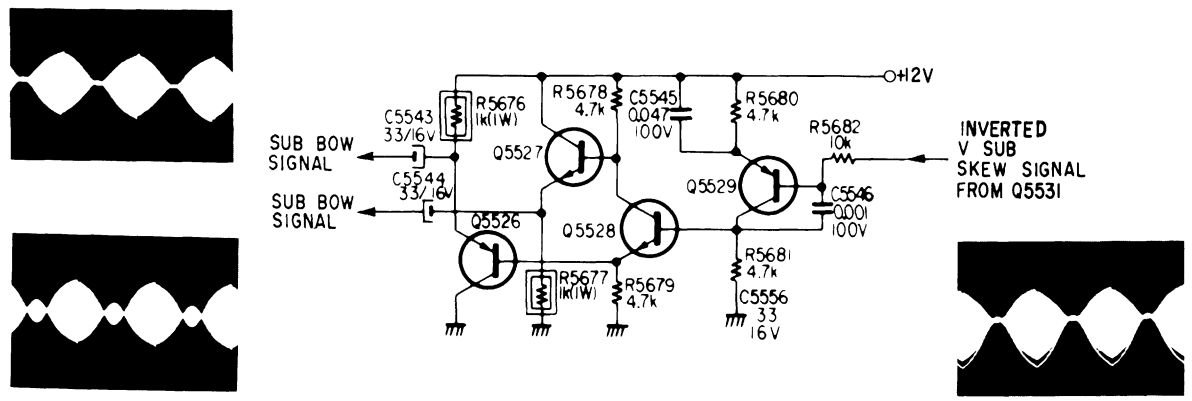


FIG. 33 SUB BOW GENERATOR

COLOR VIDEO PROJECTION SYSTEM

KP-5020/7220

Chassis No. KP-5020 : SCC-316A-A
KP-7220 : SCC-317A-A

US Model

No. 1
July, 1980

CORRECTION

Correct the service manual as shown below.

☛ : **corrected portion**

Page 43: 4-4. G BOARD ADJUSTMENT

When replacing the following components, make the HV HOLD DOWN and HV REG adjustments.
G board, DC block
R904 . . . . . .in DC block
IC501, Q801, Q802, Q803, D502, D801, D802, D803, R517, R802, R803, R804, R809, R825, C806, C807, T801 . . in G board

When replacing the following components, make the HV REG adjustment.
R905 . . . . . .in DC block
Q806, Q807, D807, D808, D809, D810, R814, R815, R816, R826, Q808 . . .in G board
Q904 . . . . . chassis

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